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Derangement of The Semilunar Cartilage

With a report of forty-six operative cases

HENRY C. COURTEN, M.D., F.A.C.S., AND FREDERICK C. COURTEN, M.D., F.A.C.S.

Richmond Hill, N. Y.

THE exact date when derangement of the semilunar cartilage was first described is uncertain but definite mention of it was made in 1803, by Hey of Leeds, and it was referred to thereafter as the "Internal Derangement of Hey." As this was in the preaseptic era of surgery, operative attempts at correction of this condition were often attended with serious consequences and to the untoward results of surgical procedures in these days may be ascribed the deep seated fear which exists to the present time in the public mind regarding operations on the knee-joint. That there was some ground for this fear in the early days is shown by reports by various surgeons. Lorry, in 1860, reported one hundred and sixty-seven cases with a percentage cured of sixty-nine, failures twenty per cent, and mortality 11 per cent. In 1884, Browne reported eighty-eight cases with eighty-two per cent cures, six per cent failures and twelve per cent mortality. This contrasts with a report by Tenney, in 1895, of two hundred and ninety-seven operations with six cases of ankylosis and no deaths. While this last report shows a marked improvement over the previous reports it still is far inferior to results reported at the present day.

In introducing this subject it may be of advantage to review briefly some of the anatomical and mechanical aspects of the knee-joint. The knee-joint is not a simple hinge but, rather, a sliding joint in which the tibial condyles slide along the femoral condyles. As the joint surfaces of the femur are rounded peripherally a slight gap would exist around the condyles were it not filled by the semilunar cartilages. These are fibro-elastic structures, slightly compressible, wide at their periphery and tapered internally. The medial cartilage is semicircular and the lateral nearly circular. Each is attached to the joint capsule peripherally, the internal far more securely than the external, and lie free at their inner border. Moderately firm attachment exists to the upper tibial surface by coronoid ligaments but they are free with reference to the femur. The inner cartilage is longer than the outer and terminates anteriorly by bifurcating; the anterior portion of the bifurcation passes across and is attached to the external semilunar cartilage, being known as the transverse ligament. The posterior portion of the bifurcation attaches to the head of the tibia in the anterior non-articular space in front of the tibial spine. This anterior arrangement is not always constant. The posterior extremity of the cartilage is attached to the non-articular surface of the tibia, posterior to the spine

* Read before the Queensboro Surgical Society, at Forest Hills, N. Y., March 20, 1933.

and in front of the insertion of the posterior crucial ligament. The external cartilage attaches anteriorly in front of the tibial spine and posteriorly to the tibial spine. Peripherally the attachment of this cartilage to the external lateral ligament is less firm than that of the medial, thus allowing considerable mobility and greater adaptation to motions of the joint.

THE motion of the knee-joint is twofold, antero-posterior and rotary. The rotary movement of the tibia on the femur takes place while the knee is in a flexed position. When flexion has proceeded to one hundred and fifty degrees, the joint becomes comparatively loose and this increases as the joint is flexed until rotation of about thirty-six degrees is allowed. This is of decided practical importance because injuries and treatment are intimately associated with the presence of rotary movement.

Statistics have shown that the ratio between injuries to the internal semilunar cartilage as compared with the external is about fifteen to one. This is explainable by the lack of mobility of the internal cartilage through its firm attachment to the tibia and internal lateral ligament, by the tendency of the lower leg to rotate outward in falling, thus throwing both torsion and strain on the internal lateral ligament while the knee is in flexion and by the fact that direct violence is usually applied to the lateral aspect of the knee rather than the medial, thus forcing the knee inward. The forceful bending or torsion of the knee lacerates or strains or stretches the fibres of the internal lateral ligament attached to the tibia and cartilage, so that the cartilage is displaced inward and is caught and sometimes fractured between the surfaces of the joint when it is restored to a normal position. The reverse of the above movement may produce an injury to the external cartilage.

The symptoms of the acute and chronic case differ somewhat in character. As a rule in the acute case there is a history of recent trauma and the signs of an acute traumatic synovitis. Locking of the joint in a position of about thirty degrees flexion is usually, but not always, present with inability to completely extend the knee. There may be effusion into the joint. The patella floats and pain and tenderness are marked, particularly over the affected cartilage or ligament. If the lateral ligament is torn there is apt to be some lateral instability of the knee.

IN the chronic case symptoms may vary somewhat from those mentioned. In the majority of cases there is a history of recurrent locking dating back to a definite injury, sometimes years before. In some of these cases a sudden twist of the knee throws the cartilage out and the knee is locked. Usually there is sharp pain in the joint, with more or less swelling and complete disability until the cartilage is disengaged and symptoms subside. In others local symptoms in the knee are slight except for pain and locking. This type of patient has usually learned through experience how to release the cartilage and does so quickly without medical aid, thus avoiding some of the secondary local symptoms that usually accompany the acute condition. In still others there is no history of locking of the knee but there is a complaint of more or less constant pain and weakness at some point along the joint line in front, to one side or the other, of the patellar ligament. This pain is aggravated by over-activity of the joint.

In differentiating cartilage injuries from other conditions affecting the joint it is necessary to consider cysts of the cartilage, arthritis, loose bodies, cartilaginous or osseous in type, fractures into the joint, rupture of the crucial ligaments, or rupture of the lateral ligaments without injury to the cartilage. The presence of arthritis, loose bodies, or fractures is readily detected by means of the X-ray. Injury to the crucial ligaments is attended by abnormal antero-posterior mobility of the tibia on the femur. Rupture of the lateral ligament is usually not attended by locking of the joint and marked lateral instability of the joint is present. Severe contusion or strain of the joint may produce a severe synovitis but is not attended with locking or persistent local tenderness over the cartilage. Cysts of the cartilage are differentiated from injuries to the cartilage in the same way and can usually be felt through the skin as a distinct tumor mass beneath the lateral ligament.

THE findings in the knee-joint vary. Displacement of the cartilage in some cases may consist merely of a relaxation of the joint capsule which allows the unfractured cartilage to displace inward and become contused. Fracture of the medial cartilage occurs most frequently near or at its anterior insertion where the cartilage is least securely attached and split into two portions. Fractures in this region may extend longitudinally around the greater part of the cartilage, leaving the periphery attached and the inner longitudinal portion displaced inward and pinched within the joint, producing the so-called bucket-handle type of fracture. The same bucket-handle type may originate from a split at the middle portion of the cartilage, leaving the extremities intact. The most common form of injury is a tearing loose of the anterior insertion with a part of the torn portion reflected inward toward the condyle. A second common type is a transverse fracture at the junction of the anterior and posterior two-thirds. These are the types, in which displacement of part or all of the cartilage occurs, that produce the classical symptoms of locking. There is a large group, however, where locking does not occur. The symptoms are pain and tenderness with the feeling of weakness at some point along the anterior joint line. This is usually about three-quarters of an inch to the inner side of the patellar ligament, but it may occur at a corresponding point lateral to the patellar ligament. Pressure over this point elicits pain and, in many cases, a small mass can be palpated. The fractured end of the cartilage is found imbedded in a mass of inflammatory tissue in the joint capsule. This mass may assume the proportion of a small fibrous tumor from a quarter to three-eighths of an inch in thickness. The inflammatory reaction around this mass, together with a more or less constant pressure to which it is subjected, accounts for the nature and continuance of symptoms. This condition is responsible for fully as much disability and discomfort in general as the locking type of cartilage, although the acuteness of the symptoms is not so marked. In cases of chronic arthritis where secondary involvement of the cartilages appears, one finds, in addition to the relaxation, atrophy, or fracture of the cartilage, the classical signs of joint destruction with partly calcified tabs projecting from the synovia and many times loose fragments of cartilage in the joint.

THE treatment of the condition varies according to the duration of symptoms. If it is the first dislocation, the usual signs of an acutely injured joint are apt to be present. The limb is in semi-flexion. There may or may not be effusion into the joint. The joint is apt to be extremely painful and marked tenderness is present over the injured cartilage. If the patient is cooperative, an attempt can be made to reduce the dislocation without an anesthetic. This is accomplished accord-

ing to the method of Sir Robert Jones by placing the knee in acute flexion and lateral deviation, with rotation inward, followed by an attempt at full extension. Where the internal semilunar is involved this maneuver relaxes the capsule, separates the medial surfaces of the joint, releases the pressure on the cartilage and permits it to be jerked into its normal position on straightening the knee. If the external cartilage is involved, the reverse of this procedure can be attempted. If the dislocation has been reduced, the knee will come to full extension with a sudden and definite stop. But if the dislocation has not been completely reduced, there is a springy feel as the knee is straightened. If reduction has been successful, the limb should be placed in a splint in the extended position and local treatment given to the swollen knee. This immobilization of the limb should continue from two to three weeks during which pressure should be applied to the knee to help reduce the swelling. If necessary, aspiration may be resorted to. After this period, a firm knee support should be supplied and passive motion of the joint instituted. In many cases, so treated, healing and reattachment of the cartilage ensues. In some cases, however, the cartilage cannot be reduced by these measures and the treatment in such cases is similar to that in the recurrent cases. In the recurrent cases there is usually a history of periodic locking of the joint with the characteristic symptoms of swelling of the joint and pain. A twist of the knee when descending stairs or getting in or out of vehicles or while engaged in athletic pursuits causes the cartilage to dislocate and become injured. Many such patients have acquired the knack of reducing the dislocation and pay but little attention to it. However, in a large percentage of cases, the condition is attended not only with pain and discomfort but an actual economic loss through necessary absence from work. Where two or more dislocations have occurred,the question of operation and removal of the cartilage comes strongly to the fore. It is a well known fact that cartilage itself has but little healing ability and where two or more dislocations have occurred, it is evidence that there is a free unattached portion of the cartilage which is continually subject to injury and there can be no point in favor of allowing such a condition to continue. In this operative class, likewise, belong those cases without definite history of locking, but with continuous or intermittent pain over the anterior portion of the cartilage.

IN approaching the subject of operation on the knee-joint, it must be remembered that, although experience has shown that no greater danger of infection exists in the joint than in other closed cavities of the body, when infection does occur, the results are far more disastrous than in other localities. The disability with reference to the cartilage has been intermittent in character but in many cases with comparatively long normal intervals. If, at the end of operative treatment of such a condition, the patient finds that his knee has become ankylosed or worse, it is embarrassing and difficult for the surgeon to offer a reasonable explanation. Thus it becomes of especial importance to exercise all possible means of asepsis, both in the preliminary preparation of the operative area and in the conduct of the operation itself. Knee-joint operations should, where possible, be conducted in an operating room reserved for aseptic purposes. Careful preparation of the limb should be carried out on the day previous to operation and on the morning of operation, and in each case should include thorough protection of the part with sterile towels. Methods of preparation vary with different surgeons but the main point involved is that thorough preliminary preparation be carried out. The operation is conducted with the knee flexed over the end of the table and a tourniquet around the thigh. The majority of operators use the Jones incision or some of its modifications. The skin incision begins about one-half inch lateral to the middle of the patella, extends downward to about one-half inch below the joint line, and thence curves posteriorly for about one to one and a half inches, the total incision being about two and one-half inches in length. Towels are clipped to the skin edges, thoroughly walling off all skin from the field of operation. The fascial incision corresponds to the skin incision with the exception that its lower portion is just below the joint line. In prolonging it posteriorly, care should be exercised not to divide the lateral ligament. A third incision through the synovial membrane on a slightly higher level now exposes the joint cavity. The cartilage is located and the joint is inspected for loose bodies. In freeing the cartilage from its attachment an old fashioned solid type of scalpel of small size is preferable to the knives with detachable blades because of a lessened tendency to break. Where the entire cartilage is detached it should be completely removed. Where the dislocation involves the anterior half, it is customary to remove as much of the cartilage as is readily available. Where a small posterior portion is attached, no harm results from permitting it to remain. The synovial membrane and fascia are now closed in layers with continuous chromic number 0 or number 1 and the skin with silk. Sterile dressings are applied and the limb placed in a Thomas splint for two to three days in the extended position. Occasionally, moderate effusion takes place into the joint but this rarely calls for any special treatment. The patient remains in bed for ten to twelve days until the stitches are removed but passive motion is begun at about the eighth day. The patient is now allowed up with crutches and instructed to walk with the knee straight. Physical therapy is now begun and gradually increasing motion of the joint is secured. The period of convalescence varies considerably according to the condition of the joint previous to operation.

AS TO prognosis, much depends on the duration of symptoms. If the injury is of long duration, with frequent recurrences, considerable atrophy is present in the thigh muscles of the affected side. The hamstrings may be somewhat contracted because of the continued flexed position of the knee. The temperament of the patient, many times, has an influence on his response to treatment, as has also the character of the individual's occupation. However, some patients are able to get about in a comparatively normal manner after three weeks, while the average uncomplicated case requires from five to six weeks before returning to his regular occupation.

In the series of cases, reported here, it appears that eleven cases had experienced symptoms for a period under six months, sixteen cases from six months to a year four cases one to two years, two cases two to three years, four cases three to five years, four cases over five years and four cases uncertain.

As to age, ten cases were under twenty years, seventeen between twenty-one and thirty-five, ten between thirty-six and fifty and nine cases over fifty years.

As to location of injury, the external cartilage was injured in five cases, the internal in thirty-nine and both in two. The ratio between internal and external injuries was about eight to one. Of these forty-six cases, forty-one had a history of injury and five were secondary to arthritis of the joint. Of the forty-one cases due to injury, eight showed associated joint changes. Average

operating time was forty-two minutes and average time in the hospital was sixteen days.

9427 118th Street.

Discussion

DR. FRANK N. DEALY: "The slides just shown by Dr. Courten belonged to Dr. Edward A. King, assistant to Dr. George D. Stewart, both of whom are now dead. I hesitated at first in procuring these slides but finally came to the conclusion that as all of us subconsciously want our work to go on, it would only be in keeping with this spirit to show these slides which Dr. King himself had prepared from operative work and from dissection on the cadaver. Whatever merit there is in them, therefore, I should like credited to his memory.

"He had done this work in connection with a paper which I heard him read at St. Vincent's Hospital some time ago on this same subject. It was a good paper, too, but I was amused by the discussion which it provoked. Covering the subject, as Dr. Courten has just done in so complete a way, there was little left for discussion on the scientific side, the discussion therefore immediately degenerating into the recital of the personal experiences of those present who happened to have had difficulty with their own cartilages. Some had been operated upon and some had not, considerable partisanship being displayed toward the subject of operation, one's attitude obviously depending very much upon the nature of one's own personal experience. I must confess that I took part in that discussion, my only qualification being that I, too, had had one of my cartilages removed. I made up my mind subsequently, however, that if I could muster the necessary strength of character, I would refrain from reciting personal experiences in the future and determined, lest the temptation prove too strong, never again to discuss this particular subject.

"It was, then, naturally rather disquieting when I found my name on the program to discuss this paper of Dr. Courten's. I knew that I would be able to add nothing to what he would so thoroughly present, and I still remembered my former resolve. In sheer desperation, therefore, I called Dr. Courten for advice. He told me that the only reason he had wanted me to discuss the paper was that I had had the operation done on myself and that I could therefore discuss it from the personal standpoint! Not altogether flattering, after all, though true!

"Resolutions cast aside then, as resolutions so often are, I face the inevitable.

"A large proportion of injuries to the cartilage are found among those engaging in athletics—tennis, hockey, baseball, etc. I myself was lifting a toy boat out of the lake for one of my children when my cartilage slipped and was fractured, so that I cannot even mention, in a casually boastful way, any heroic etiology. The disability, however, was absolute and transformed me from a person usually able safely to navigate on foot the busy thoroughfares of a large city, to one who was strictly dependent upon the carefulness of the numerous taxi-drivers to avoid personal injury. I should say that the outstanding feature of my own difficulty, during the period before I submitted to operation, was the absolute unreliability of the injured leg. I could in no way depend upon it in any emergency, for the slightest twist or unexpected strain caused it to fail me absolutely. There was no locking, no severe synovitis, but aside from the usual pain, mainly an entirely unreliable joint. Operation, however, restored full use of the knee. Dreading only the possibility of infection, I had the cartilage, which proved to be fractured longitudinally, removed. Passive motion was begun the day of operation, convalescence was rapid and on the ninth day I left the hospital. I drove my own car, with extreme care to be sure, on the tenth day and there has been no trouble since. In discharging my own patients from the hospital, I am almost invariably content with the term "improved" in indicating their postoperative condition. This would be inadequate in my own case, however, for nothing short of the word 'cured' would really apply.

"Dr. Courten has presented this subject in such a clear and all-embracing manner that there is nothing that I can add even if I had been expected to. As it is, I shall only ask the forbearance of the Society for this rambling dissertation by stating that with both feet firmly on the ground, I have simply tried loyally to fulfill my part of the program as I was asked to do, with this, I hope, final recital of a personal experience."

DR. JOSEPH S. THOMAS: "I think this is one of the best papers I ever heard at this Society on an interesting subject and a subject with which Dr. Courten has had ample experience to form a judgment. There is no detail of the subject that I know of that the doctor has not discussed and discussed so thoroughly that there isn't very much left to say about it. If I had any difference of opinion with him on any of these important matters, I would feel, in view of the fact that he has had so much more experience than I, that probably his opinion was better than mine. In addition, we have had the discussion of Dr. Dealy about his own personal experience which must have been very interesting indeed.

"These things are not always recognized. I have known a good many people who had locking of the joint and were able to kick it out again. A good many of them would not think of being operated upon because they know so many others who have had it as a result of athletic activities when they were young, but after outliving their active days in athletics they have not been troubled very much with it.

"When you contemplate entering the knee-joint you are usually in a position of assuming a great deal of responsibility. When you contemplate the possibility of septic infection of the knee-joint through the medium of an operation, you feel that the indications for such a procedure must be pretty definite, yet there are very many of these people who are really disabled during the attacks. So far as Dr. Dealy is concerned, he could hold up his hand to stop a taxicab, but suppose the taxicab did not stop; then he couldn't help himself. Perhaps that is an exaggerated case, but I have known a number of patients who were disabled just as much as that. In cases like that I don't think there is any question at all about operation. Any man with sense would not put himself in a position of that kind for the sake of avoiding the simple risk that is entailed by submitting himself to operation at the hands of a good operator.

"Locking has been spoken of by both Dr. Courten and Dr. Dealy. Locking does not exactly describe the situation. I have seen a number of cases where it was not so much that the joint was locked, but that there was inability to extend the joint. Flexion is free and complete; the patient can flex the leg as far as he wishes, but when he attempts to extend it, when a certain point is reached, just a few degrees short of extension, there is a springy feeling that it is very easy to miss. I know that because I have missed it myself. I missed it in a woman who had been suffering with synovitis and who had her accident while skiing. She was able to walk back to her hotel and then rode home the same day, a distance of about one hundred and twenty miles. She had a rather stout leg. Her only difficulty was that she could not exactly extend the leg, but she could almost extend it. She could walk on it and did walk on it, but the pain kept increasing.

"As to the indications for operation to relieve patients suffering apparently from simple tenderness over the site of the fracture of the cartilage, I like to have a better reason than a slight amount of pain or tenderness.

"The pathology, the symptoms, the diagnosis, the prognosis, the common course, and the indications for treatment have been given so thoroughly by Dr. Courten that I do not see that there is much left for any one to add.

"In regard to the details of the operative technic, I believe that the operation Dr. Courten has described suits me better than any of the others I have read about. If there were any point of disagreement with him, it would be that I would rather operate without a tourniquet for the reason that the vessels one encounters are not large, the bleeding one gets from the incisions that are made is not sufficient to obscure the field, and if there were any bleeding I would rather clamp at the time of the bleeding, and when I got through with the operation take the clamp off and see if there were any more bleeding. Most of the small vessels will stop bleeding if you clamp them for a while, whereas if you have a tourniquet on all through the operation, when you release the tourniquet, unless you put a bandage on very promptly, there may be some vessels which escape notice and there may be some bleeding underneath the skin and a hematoma may develop. That is my reason, but my experience with the operation has been too small to really form any definite conclusions as to whether I am correct about that or not."

DR. WILLIAM K. ROGERS: "I would like to ask Dr. Courten if the term dislocation is not a sort of misnomer and possibly misleading? I mean that a dislocation cannot take place unless there is a laceration or fracture of the cartilage, and I believe sometimes that will lead some people to think it is more of a minor thing than it really is, and too often we regard a dislocation as not so severe as a fracture and the time of disability as usually shorter."

DR. JOSEPH WRANA: "I would like to ask the doctor what is the effect of free blood in the capsule of the joint in the operative field. Would the tourniquet prevent blood from coming in if it is a source of danger? Is that the reason the tourniquet is used rather than clamping the vessels?"

DR. HERMAN L. WENGER: "I would like to ask the doctor if

(Concluded on page 203)

The Value of Antiseptics in the Treatment of Wounds *

JOSEPH A. MANZELLA, M.D., F.A.C.S.
Brooklyn, N. Y.

I PRESENT this paper conscious of the fact that the conclusions and observations contained are subject to possible error. It is trite to say but still true that "to err is human." I can only say that I have tried over a period of years during which I have been interested in this subject to avoid firm and set beliefs, and to approach open-mindedly the problems frequently presented. The use of antiseptics in wounds marks a revolutionary era in surgery, begun by Lister, and leading to the aseptic surgery of today. It seems, however, that in the change and progress, feelings of antagonism and skepticism have grown up toward antiseptics, and their use in wounds has often been condemned, and in many instances justly so, for most antiseptics have no place in wound surgery. The antiseptics old and new; the old, clothed with habit and tradition, the new, dressed with color and glamour of advertising, still vie with each other to hold prestige or gain a foothold; either with those who believe that antiseptics in wounds are useless or harmful, or both; or with those who with absolute blind faith believe that they are safeguards, foolproof and trustworthy. My humble effort is to endeavor to give you my values of antiseptics as applied in the treatment of wounds. Since values are so frequently relative and often difficult of expression, especially in a clinical study, upon which my conclusions are based, I trust you will bear with me, if at times my values are not precise.

FOR the sake of clarity as to meanings, may I state that an antiseptic is considered an agent, usually chemical, which is intended to bring about a state of asepsis, and which destroys or inhibits bacterial growth.

Wounds: Not to be elementary, but merely for the purpose of establishing a common viewpoint, may I classify wounds in this paper as:

1—Clean or Aseptic Operative Wounds. An aseptic wound is one which heals by first intention, without showing any signs of local inflammation or producing any constitutional disturbances. Such a wound is not necessarily sterile or germ free. Aseptic is considered here as a clinical and not bacteriologic term, and in this class I would place what are commonly considered clean operative wounds, made under aseptic precautions.

2—Contaminated or Infected Operative Wounds. These are grossly contaminated operative wounds, such as occur in the removal of infected cysts, foreign bodies, ingrown toenails, infected sinuses and fistulous tracts, etc.

3—Contaminated Accidental or Traumatic Wounds. Here belong all traumatic wounds without suppuration or inflammatory phenomena present.

4—Infected and Inflammatory wounds with Suppuration or established Infection. These are definitely infected and inflammatory wounds with suppuration or established infection present and active.

Now in the aseptic wounds, the predominant effort is directed toward the exclusion of bacterial contamination, while in the contaminated and infected wounds, such effort is directed to the removal of bacteria, to the prevention of growth of microorganisms and to the decrease in their virulence and activity. Hence, it follows that the problem of microorganisms in wounds or wound infection is definitely a large factor in the treatment thereof. The estimate of suppuration in clean or aseptic operative wounds cannot be considered accurate, but 2% to 4% might be considered fair. In 1929 Sherman stated that "the Compensation Boards of New York and Ohio report 33% of wounds coming under their observation as being infected," and that "practically the same ratio extends throughout the country." Obviously, then, if antiseptics can in any way influence this important element in wounds, then antiseptics are worthy of consideration.

IN estimating the value of an antiseptic for use in contact with tissues, factors such as these were taken into consideration, viz., the apparent restraint on the activity of the organisms, its effectiveness in the presence of wound secretion, the degree or extent of harmfulness to the tissues, and whether there was any general or local toxic reaction present.

To mention all the antiseptics used would be impracticable and fruitless—over 200 were used during the war—but may I take up certain groups, and mention those which may be of interest in relation to the conclusions arrived at in this paper?

First: The Phenol group, including cresol, lysol, tricresol, etc., its leader being used in 1 to 5% solution. It definitely causes damage to tissues, is toxic, and aside from its use as a cauterant, I consider it holds no place now in wound surgery.

Second: The Mercurial group, among the most prominent of which are the bichloride and the newer organic compounds, such as mercurochrome and metaphen. Mercuric chloride I mention to state its many disadvantages, since it has no advantages to warrant its use in wounds. Its action is slow, not effective in the presence of wound secretions, and it is harmful to tissues, acting as a coagulant, with the danger of both local and general toxic reaction. Of the newer compounds mercurochrome and metaphen are to be considered as useful, inasmuch as in general they do not possess the marked disadvantages of mercuric chloride, and I believe possess definite bactericidal action.

Third: The Halogen group, the most prominent of which are chlorine, neutral sodium hypochlorite, chloramine, dichloramine T, and iodine in the form of the tincture. In this group, I believe, we have some of the best and most dependable antiseptics for general use in wounds.

Fourth: The Silver group, among which are silver nitrate, argyrol, protargol, etc. Silver nitrate, apparently the only one with marked germicidal power, is irritant, coagulant and astringent, so that its general use in wounds is not advisable, being useful only in certain specialized purposes as cauterization.

Fifth: The Oxidizing group, such as hydrogen peroxide, potassium permanganate and sodium perborate. These act by liberating oxygen and are in themselves

* Read before a joint meeting of the Italian Medical Society of Brooklyn and the Association of Italian Physicians of America, April 17, 1933.

quickly destroyed and evanescent, are inferior in antiseptic qualities and their chief value is in aiding mechanical cleansing and loosening of necrotic tissue.

Sixth: The Dye group, such as methylene blue, gentian violet, flavine, acriflavine, fluorescein, etc., among which acriflavine may be considered as leading, have some definite value as antiseptics in wounds. The action of this group seems somewhat more selective in its bactericidal power. In this connection, may I digress to refer to the interesting work of Churchman on selective bacteriostasis. He found that when gentian violet (the active dye in the Gram stain) is added extrinsically into a culture medium, it has the effect of preventing the growth of gram-positive organisms, and not interfering with that of the gram-negative organisms. For instance, the growth of the staphylococcus is completely inhibited, while the *Bacillus coli* grows freely. This does not mean that the staphylococci are dead. Their growth or their reproduction is merely prevented and they may subsequently revive. Churchman therefore uses the term bacteriostasis rather than bactericide.

THE flavine dyes, such as acriflavine, behave in the same manner. Churchman further demonstrated that, if first the bacteria are stained, intrinsically, with gentian violet and then are planted on the agar medium, the same phenomena will be observed, namely, inhibition of the gram-positive and non-interference with the gram-negative. Here the intrinsic and extrinsic action of the dye is the same. In the case of the flavine dyes or antiseptics, however, these two actions are diametrically opposed or reversed. The dye exerts one type of selective activity when present in the medium, extrinsically, and an activity of the opposite type when the bacteria are stained with the dye, intrinsically, and planted on the agar, and we have the phenomenon of reversed bacteriostasis. So that test-tube results may be misleading in determining the bactericidal action of dyes like acriflavine when applied to the treatment of an infected wound.

Seventh: A Miscellaneous group, amongst which may be mentioned, first, tincture of green soap, an excellent antiseptic for general use in all wounds. Post and Nicolls in 1910 found that in bacteriological tests it had reliability and prompt action, and its clinical use seems to bear this out. Alcohol between 50% and 70% has some antiseptic action, and the mild boric acid, which has no definite bactericidal power, seems to have clinically some specific beneficial effect in infections of the *Bacillus pyocyaneus*. It may also here be noted that the addition of alcohol and acetone to a watery solution of certain antiseptics, notably mercurochrome, metaphen and other newer compounds, definitely seems to increase their penetrating and bactericidal power. One may likewise mention salt solution, both normal 9/10% and hypertonic 3%, not that they are antiseptic, but they apparently facilitate wound drainage, and often the latter stimulates osmosis, at times accomplishing in effect an antiseptic action, although not a direct bactericidal one. A host of other chemical substances could be mentioned, but, I am sure, with no particular profit.

NOW, as to the use of such antiseptics in the treatment of wounds. The modern technique in wound treatment is directed to the exclusion of microorganisms from the wound, whether clean or dirty, while at the same time it aims at putting the tissues in the best possible position for exercising those bactericidal powers which they normally possess. To accomplish this, essential surgical principles are to be strictly followed out, about which I will not go into detail as they are undoubtedly familiar to you all; such as, strict asepsis, control of hemorrhage, careful cleansing and mechanical removal of foreign material, careful débridement of dead or devitalized tissues, drainage coaptation of tissues, rest, etc. When to this we can add the use of proper chemical cleansing or sterilization of the wound without damage to tissues, we will have obtained the greatest value that can be secured from the application of such antiseptics. I cannot emphasize too strongly that any consideration of the value of any antiseptic in the treatment of wounds must be predicated on the unalterable foundation that, first and foremost, the above surgical principles are basically carried out. Obviously no antiseptic will penetrate masses of necrotic tissues. To use an antiseptic in a wound and then leave foreign bodies and debris behind, or allow more contamination to take place, makes it all valueless. And here we have a fundamental reason for the discrepancy in results, observations and conclusions arrived at.

WITH these basic rules invariably applicable, the use of antiseptics may be considered briefly in each of the four classes of wounds aforementioned. In the first class of Aseptic Operative wounds, cleansing of the skin with tincture of green soap, alcohol 60%, ether, followed by tincture of iodine, half or full strength, according to the location, has clinically given me the best results of any combination. Simple cleansing with tincture of green soap and water is often efficacious but not so uniformly as when used in combination. Recently some surgeons have advocated the use of an antiseptic such as mercurochrome in a clean operative wound, before closure, but I feel that if all other fundamental principles are carried out properly, the use of such agents in this fashion is not essential, unless definite contamination has occurred or is strongly suspected. If so, I would consider this a wound under the second class, mentioned above, and designated as Contaminated or Infected Operative wounds.

IN this second class, as stated, are considered wounds contaminated during operation, and such wounds commonly occurring in the removal of infected tracts, and in operative procedures which take place in a definitely contaminated field, leaving the wound essentially contaminated, but not with established infection therein. In this group of wounds, still bearing in mind essential surgical principles, and preoperative antisepsis, by the use of tincture of green soap, alcohol and tincture of iodine, the subsequent wound before closure is dried with ether, if possible, and filled with dichloramine T. and if left open for surgical reasons, this same preparation may be applied in the form of dichloramine T gauze packing. At times mercurochrome 2%, or acriflavine 1:1000, etc., are also so used to advantage. Without the use of any antiseptics, as mentioned, the results have been less successful from an infection standpoint than with the use thereof.

Taking up their use in the third class of wounds, viz., Contaminated Accidental or Traumatic wounds, the results have been definite and the value of antiseptics, in my mind, unquestionable. Here, I consider all such traumatic wounds as being contaminated, but in which no established infection has taken place. This necessarily limits the usefulness of the treatment of such wounds to within a twenty-four hour limit, and most favorably within six hours from the time of infliction.

THE writer, in 1921, published in the *Long Island Medical Journal* a definite procedure in the primary treatment of such wounds which incorporated, from an antiseptic standpoint, the use of tincture of green soap, alcohol and ether followed by rigid adherence to the surgical principles repeatedly mentioned above, and concluded by the use of dichloramine T in the wound. The series at that time reported were 100% non-infected traumatic wounds of various types. Up to 1932 the writer has had over 1800 cases of this class, in which the same definite procedure has been carried out, and the record still holds 100%. I have tried substituting, with an otherwise identical procedure, tincture of iodine, mercurochrome, S.T. 37 and tincture of metaphen; and others. Of these substitutes, tincture of iodine about 3.7% and tincture of metaphen 3% yielded the next best record, being about equal and running around 3% to 4% infections. The metaphen seemed of somewhat more advantage, in that it was often less painful and less irritating to tissues. May I mention here that as a general all around antiseptic, I still consider tincture of iodine as one of the most dependable, and although my experience with tincture of metaphen has not been sufficiently large to warrant definite conclusions, general indications are that it is at least equally efficient, if not somewhat better? However, to resume, I will repeat that none of these have equalled the use of dichloramine T in this particular class of wounds treated with the definite procedure referred to.

THE general principle involved in the treatment here is to aid in the actual removal of bacterial contamination with the antiseptics, such as tincture of green soap, alcohol, and to a certain extent, ether, and then provide an antiseptic medium to inhibit the bacterial growth and development of such bacteria as may remain behind. The action of dichloramine T is apparently eminently fitting for such use in that it liberates its chlorine element slowly over a period of twenty-four hours. It is non-injurious to tissues, the writer having used it successfully in what amounted to full grafts. Its action is aided rather than retarded by normal blood serum and it fulfills most of the requirements of a good antiseptic under certain definite conditions. I have found it of no value after established infection has taken place with altered secretions, pus and definite infective inflammatory phenomena present. It is used in 5% solution of chlorcosane, a prepared chlorinated paraffin. In use, its contact with water is to be avoided, but otherwise it offers no serious drawbacks. S. T. 37 substituted has definitely proven of no value, the largest number of infections occurring when this was used.

Finally, from a prophylactic standpoint in these three classes, I might mention the topical application of iodine solution, mercurochrome and metaphen to the wounds at subsequent dressings, where exposure to contamination is likely and prevention of reinfection is desirable, since the use of antiseptics when so indicated has proven itself of some value, the incidence of secondary infections having diminished to a considerable extent with such use.

LASTLY, may I take up the fourth class of Infected and Inflammatory wounds with Suppuration or established Infection? Here, I must state that, in general, disappointment is to be anticipated. Irrigation and wet dressings with various antiseptics have definitely proven quite unsatisfactory from the standpoint of antiseptic value. Apparently the irrigating solution or constant wet dressing accomplishes more by aiding drainage rather than by any antiseptic action exerted upon the microorganisms present. Solutions favoring osmotic action, such as magnesium sulphate and hypertonic salt solution, often exhibit just as favorable an action or effect as any with an antiseptic. Here, however, mention must be made of Dakin's solution, which, when used with the proper Dakin-Carrel technique, has shown definite evidences of germicidal action, and unquestionably aids in combating infection. Also irrigation with Dakin's solution seems primarily to effect a flushing of the wound, so preventing the formation of a coating of secretion, fibrin and bacteria, which forms on the wound and dams back the lymph flow. This, perhaps, illustrates the difficulty of evaluating the value of any given antiseptic, since the germicidal property is here not its most important characteristic. The solvent action on dead tissue, the efficient flushing of the wound, and the necessary adequate drainage which is a proper part of the entire Dakin-Carrel technique are definite factors in the success usually associated with this chemical. Dilute watery solutions of iodine and dilute alcohol 10% to 70% combined with boric acid solution are recommended, but I can assign no value as to their antiseptic action. However, in this fourth group of established infected wounds, when there are no markedly active inflammatory phenomena present, but more of a low grade chronic infection exists, such as heavily contaminated ulcers and chronic granulating surfaces, often the application in the wound or on dressings of such antiseptics as tincture of iodine, mercurochrome, and acriflavine, and occasionally other mercurials, such as ammoniated mercury, has been followed by the effect of cleaning up the wound infection with subsequent more rapid healing. Here, often the type of organisms existing is strikingly affected by some antiseptic, in which action I believe selective bacteriostasis probably plays an important part.

Summary & Conclusions:

1—That a certain limited number of antiseptics have a definite value in the treatment of wounds. Their principal and greatest value is exhibited in those classes of wounds where prophylactic use for the prevention of infection is the principal object, as particularly demonstrated in the class of Contaminated, Accidental or Traumatic wounds.

2—That the value of antiseptics in wounds, where active established infection is present, is definitely small, the use of Dakin's solution according to the Carrel-Dakin technique being of some definite antiseptic value. However, in this group of wounds, the antiseptic solutions themselves in the form of irrigations or wet dressings are apparently of more benefit by aiding drainage, either mechanically or by osmotic action, rather than by the antiseptic action itself.

3—That antiseptics may be used with advantage on wounds where established infection is present without active inflammatory phenomena, such as chronic granulations and ulcers.

4—Further, that the application of antiseptics is of some value in subsequent dressings for the prevention of secondary infection or recontamination, in all classes of wounds.

5—That I consider antiseptics of comparatively no value in the treatment of wounds, unless sound, established surgical principles, such as mechanical cleansing, asepsis, control of hemorrhage, débridement, drainage, coaptation, rest, etc., are all scrupulously adhered to, and accompany their use.

6—That of the large host of antiseptics, most are of little, if any, value, not meeting with the require-

(Concluded on page 201)

Treatment of Malignancy by the Implantation of Radium*

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IT is no longer necessary to begin an address on radium before a medical audience with an explanation of what radium is and "how it works." Radium has now taken its place in our therapeutic arsenal on an equal footing with other surgical and medical means of combating disease. There still linger a few echoes of the old controversy as to the relative merits of surgery and radium, but even these are dying away. It is quite generally realized that the physician who fails to employ radium, in those circumstances where it is admittedly applicable, is depriving his patient of his due chance of life and health in exactly the same measure that one who failed to administer antitoxin to a diphtheria patient would do. Such a physician, in the opinion of one of America's greatest gynecologists—Howard Atwood Kelly—"actually condemns patients to unnecessary suffering, invalidism and even death, who might have been saved by the more effective remedy."

Thus we must define radium, not in terms of physics, but in those of the clinic and sick-room. We must understand it, not necessarily as an element, but as a therapeutic agent first and foremost. Chiefly, it is a *source of energy*, and the special exhibition of this energy in which the therapist is interested is its effect upon the body of his patient—that is, upon living tissue. The value of radium, in the treatment of disease, resides in its property of giving off *radiation*, and it is not the radium itself, but the radiation from it, which the therapist employs.

RADIATION is not, however, a single entity, but must be thought of as having several component parts, the different types of ray which a radioactive substance is capable of giving off. When using these rays therapeutically we speak of them as *hard* or *soft* —meaning by this that they are possessed of great or weak powers of penetration. The amount of penetration is the standard by which rays are valued for therapeutic purposes. The effect which any given amount of radium, or rather of the energy given off from radium, is able to produce will depend upon the type of ray utilized, the amount of this selected raying which is applied, the manner in which it is distributed, and the special way in which the applications are carried out.

In order to make the best use of the radiation we are thus able to obtain we must select at will the type of ray best suited to the purpose intended. We expect certain results from using a selected type of radiation, and to meet our requirements, we have, from time to time, developed mechanical devices which further these aims. Thus, the history of radium therapy has been largely a history of the men who studied and sought out better means of application, better ways of separating the different types of rays, and more exact instruments for placing and distributing the dosage.

AS it is in the treatment of malignancy that radium is most commonly employed, I will, for a moment, direct your attention to our usual conceptions in regard to this particular form of disease. Malignant neoplastic growth is the multiplication of living tissue cells which possess a tendency to go "from bad to worse." Mitosis, which is the state of active growth or cell-division, is more constant and consistent in malignant proliferation than in new growths benign in character. Early in the history of radium therapy it was discovered that the rays given off by radium have a selective action upon such cells—that is, normal, healthy cell growth is not so much affected as is the "wild" proliferation of malignant new growth. So we say that healthy cellular tissue is more *radioresistant* than neoplastic growth.

It is concerning the exact nature of this *action* that much of the misconception concerning radium therapy has arisen. We often see the statement that a growth was *destroyed* by radium. It is not *destruction* that we seek in our therapeutic efforts, but *alteration*. The true end-result of radium treatment is *tissue change;* it is not destroyed but rendered sterile—incapable of further growth, and, therefore, impotent for further mischief. The tissue which was threatening the patient's life remains, but it has been made harmless.

IT is important to keep this distinction in mind when considering radium therapy. All other treatments of malignancy involve removal; the surgeon cuts away the tissue; the cautery burns it out; diathermy dehydrates and withers it. Radiation acts on another principle altogether, and it is in the understanding of this principle that our success with this therapy must rest. In some manner which is not as yet fully understood, the selected rays act upon the metabolism of the dividing cells and disturbs it, so that their growth and proliferation are hindered. This retardation is quickly succeeded by degenerative fatty changes, with rapid death of the cell itself. In addition to their ability to destroy the life of the cell, certain of the rays are also able to induce fibrotic changes in the tissue. As certain other rays have caustic qualities—that is, they burn as well as fibrose—we must use measures to eliminate the kind of rays which do not produce the effects we are seeking. This is what is meant by filtration. By the use of certain substances, metals in particular, it has been found possible to cut off certain undesirable rays, while those which we wish to utilize pass readily through them. Thus the *beta* or caustic rays can be cut off by a filter of gold or platinum, through which the *gamma* or fibrosis-producing rays pass unimpeded. Much of the injury which was done by radium in the early days of its use was due to a lack of understanding of this principle. And much of the disrepute which has fallen upon this most excellent therapy arose in the same way. Even today, we hear of fistulae, of burns and necrosis, following the administration of radium therapy. That such things do still happen, occasionally, simply means that some members of the medical profession have allowed themselves to fall behind in the march of progress. Modern mechanical appliances, allied with increased technical skill and greater knowledge of radium's physical qualities, have abolished these earlier chances of mis-

* Read before the Flatbush Medical Society, Brooklyn, April 14, 1933.

fortune, just as the dangers of fire-damp have been eliminated by electric illumination.

AS regards the sensitivity of different cells to the effects of radiation; there is much greater susceptibility evidenced by malignant tissue than by normal tissue. There is, however, great variation between types of tissue, whether the particular specimen under consideration be benign or malignant. The cells of which nervous and muscular tissue are composed resist the effects of radium very strongly. Highly specialized glands, such as the thyroid, are less affected than tissues in which differentiation is not so marked. The basal layers of stratified epithelium throughout the body—that is, the "mother cells"—show a far greater degree of susceptibility than those just mentioned. Those structures derived from primitive mesoblastic tissue—lymphoid tissue and bone marrow—display the highest degree of susceptibility to radiation of any normal structures.

From what has been said regarding susceptibility, it is evident that in order to act upon malignant tissue radiation must reach every cell. If only some of the mitotic cells are rendered sterile by the action of the radiation, those untouched soon grow up to take their places. As a matter of fact, this very frequently happens. "Recurrence" is an ugly-sounding word which we have all heard more often than we like. Therefore, radium therapists continually strive to devise means of reaching every single cell which is potentially or actually malignant. The only way to do this satisfactorily is to place the centers of radioactivity directly inside the tumor mass. It was a long time before we learned how to accomplish this most effectively. That is why the earliest successes with radium treatment were in skin lesions, and also explains why so many different methods have been successfully used in epithelioma situated within the body cavities—cancer of the uterine cervix furnishing an excellent example of this.

AT PRESENT the implantation method is recognized as the most truly efficient way of applying radiation. Only by the use of radon, which is a gas, and, therefore, compressible into many forms of applicators suited to different locations, can we hope to reach every portion of a given lesion, and so dispose the amount of radiation needed in such a way as to give each cell its proper lethal dose.

The implantation method consists in embedding, in the tissue to be treated, a minute tube of suitable material containing radon—the gas given off by radium salts. These tubes were first made of glass alone, but as this material only cuts off the weak alpha rays, and permits the passage of the caustic beta rays as well as the therapeutically useful gamma rays, the employment of glass seeds had many drawbacks. When we devised a method of screening the glass seed with platinum, we were able to eliminate the beta radiation, which was a long step in advance. Some therapists use seeds made directly of metal, but these are not so reliable as the metal-filtered glass seed, as they cannot be absolutely sealed against leakage. For a long time we were obliged to leave the seeds in the tissue, once they were implanted, as there was no way to recover them. Often they did no harm when thus left permanently, but there was always a chance that they might cause irritation, with the possibility of re-activating the very malignant process they had been inserted to abolish. This difficulty was eventually overcome by attaching a thread to each filtered seed, which not only serves to withdraw it when the desired period of treatment is ended, but also marks the precise spot where the seed was inserted, and permits the therapist to observe whether the implantation is being correctly spaced.

THE proper spacing and distribution of the seeds is the chief feature of "radium treatment" under this technique. The technique itself is simple enough, but it must have behind it a thorough conception of the principles upon which the therapy is based. The experiments of Lacassagne demonstrated that a filtration of no more than 0.3 mm. of platinum would give adequate protection to tissue exposed to radiation for as long as twelve days, provided the amount of radon used did not exceed 7 millicuries. Therefore, a screenage of 0.3 mm. of platinum is amply sufficient to protect the structures about the malignant area under treatment from any ill effects, always assuming that we use no more than 7 mc. of radon.

In our work we have used Lacassagne's results as a basis of measurement, and have decided that it is practical to deliver 333-1/3 mc. hours of radiation from each seed filtered by 0.3 mm. of platinum, varying our time period all the way from ten to thirty days. Immediately we found that our limit of safety could be much extended. It now became possible to give a higher radon content to the individual tubes. This enables us to use fewer units because of their higher concentration. The total number of seeds needed to implant a given lesion was thus considerably diminished, which meant less trauma to the tissues and greater satisfaction in the administration of the therapy. The careful placing of the seeds so that an even radiation is distributed to all parts of the lesion goes far toward making radiation as scientifically accurate a method of treatment as any in the realm of medicine or surgery.

420 Lexington Avenue.

The Value of Antiseptics in the Treatment of Wounds

(Concluded from page 199)

ment that they shall possess effective bactericidal action without harm to the tissues.

7—That antiseptics that are of value in wound surgery can be limited to a few, among which may be mentioned tincture of green soap, tincture of iodine, dichloramine T, and neutral sodium hypochlorite (Dakin's solution), alcohol 60% solution, mercurochrome, metaphen and acriflavine.

8—That most of the above mentioned antiseptics, used in a selective manner with definite purpose, and with regard to the type and class of wound, the time and manner of application under the conditions prevailing, and in accordance with proper surgical principles repeatedly referred to, will definitely and materially aid and assist in reducing the incidence of both infection and morbidity associated with wounds.

In closing, may I say that if I lead you all astray be reminded of the opening paragraph of this paper, in which the reader was reminded that "to err is human." Let me add "to forgive divine."

340 Clinton Street.

A Chloramine Liniment

J. W. Tomb gives ("British Medical Journal," 3765,367) a method of overcoming the difficulty of varying chlorine content in chlorinated lime liniment prepared as suggested by him in 1924. He now uses chloramine in an emulsion of equal part of lime water and arachis oil (or olive oil), the chloramine readily dissolving in the lime water of the emulsion. The strength is usually from 2 to 4 per cent of chloramine.

Nature and Uses of Bacteriophage*

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IN 1915 (1), Twort published a paper in the *Lancet* describing a curious phenomenon which he had observed when doing some research work with filtrable viruses. He found that some of the colonies on the agar slants became glassy in appearance and transparent. A Giemsa stain showed only reddish-staining granules without any definite morphology. Fresh colonies, if brought in contact with this glassy substance, assumed the same watery appearance. This action stopped after this glassy material was exposed to a temperature of 60°. Twort could not decide what the phenomenon was; he thought it was a substance excreted by certain bacteria themselves or of a parasitic amoebic origin.

A very similar phenomenon was observed in our own laboratory four or five times during the last twenty years. It occurred in the process of the Widal test. After all the usual dilutions were made and the control observed for the motility of the bacteria, it was noticed that sometimes in a period of a few minutes all the living bacilli had disappeared but the control which did not contain the patient's serum was unchanged. A repetition would produce the same effect. The conclusion was reached that the living organism underwent lysis of an inexplicable origin. The history revealed that those patients had had typhoid before. Using dead typhoid bacilli for the Widal showed very strong agglutination. Today we know that it was phage contained in the immune serum of the patients which produced lysis in the living organism.

D'Herelle in 1917 (2) published his experiments, which showed exactly the same phenomenon as Twort had observed. He made a weak emulsion of dysentery stool with broth, obtained a clear filtrate through a Chamberland candle and after introducing a few drops of this liquid into a fresh culture of dysentery bacilli, produced a clearing, or lysis, of the organisms within a few hours. Transplants of this lysed media produced no further growth. With the same dissolved culture he could produce the same lytic principle in 935 young broth cultures. Due to the fact that this lytic principle may be maintained through many generations, he came to the conclusion that he was dealing with a living ultramicroscopic organism, feeding on living bacteria, and spoke of it as a "Bacteriophage." In other words it is a parasite living and reproducing on organisms. He found that this phenomenon occurs not only in dysentery, but also in all of the infectious diseases studied by him—namely, cholera, typhoid fever, infantile diarrhoea, septicaemias and bubonic plague. In each of these there appears during convalescence a bacteriophagic principle which has the power to destroy and dissolve the pathogenic bacteria responsible for the infection.

DIRECT microscopic examination shows that the process of lysis or destruction of the pathogenic organism is a sudden bursting of the bacterial body which swells gradually little by little and suddenly ruptures, leaving nothing that is visible. D'Herelle, during his experiments, came to the conclusion that bacteriophage is in the form of a corpuscle about 10 millimicrons in diameter, which multiplies rapidly at the expense of bacteria for which it has an idiosyncrasy.

It is quite safe to assume that the bacteriophagic corpuscle acts on living organisms by means of a ferment which it secretes. The secretion of a soluble ferment by an organism necessarily implies the existence of metabolism in that organism.

Since the potency of a phage can be increased by repeated transplants into fresh young cultures, we must assume that the phage corpuscles are living organisms. On the other hand, if this phenomenon of producing lysis is dependent on a purely chemical action or a chemical enzyme, repeated dilutions would decrease the lytic principle and the phage would eventually be powerless. The phenomenon of bacteriophagy is just another example of the well recognized biological phenomenon of parasitism.

Some bacteriophagic principles are specific, others have a group action. Some, for example, attack the *B. Coli* and *B. dysenteriae,* while others attack only the individual strain. As a general rule for organisms of the intestinal flora, we get a phage having a large group action on the colon-typhoid-dysentery group. The same holds true of the staphylococcus groups. Phage for streptococci is much more difficult to find, and if found, it is usually specific only for the individual strain. Phages also vary considerably in the intensity of their action.

THE preparation of phage, and especially the staphylococus phage, is by no means a simple one. It is very important to study the individual strain of organisms, as strains are often found from which it is impossible to produce phage. Raw sewage is one of the best sources of bacteriophage for organisms of the intestinal flora, as *B. Coli,* typhoid, dysentery and the streptococcus group. Some very active staphylococcus phages have been isolated from the sewer water, although for this group it is not the best source. The most fertile source for the staphylococcus group is freshly isolated cultures from cases of chronic infections such as furunculosis, acne, osteomyelitis and sinusitis. Usually a weak phage is found to be associated with infections of a more chronic nature. This weak phage, before it can be used, has to be strengthened and the potency increased. Repeated contact with different strains as well as the homologous strain is the most effective way of increasing its potency. Nevertheless, sometimes strains are encountered which cannot be made potent and always will remain weak and therefore unsuitable for therapeutic use. It is obvious, then, that a bacteriophage for clinical use must be either a highly polyvalent or highly specific one, must be free of contamination and incapable of yielding a secondary growth.

Bacteriophage is made in many institutions, hospitals and commercial laboratories. The results obtained with these phages are far from being uniform. This is mostly due to the fact that the phage has been incorrectly prepared and when used the therapeutic application is disappointing and the basic principle is therefore assumed to be faulty. Many preparations of bacteriophage on the market have been tried out and showed no lytic action. This may account for the lack of good results obtained. In some cases the inhibitive

* From the Department of Bacteriology of the Brooklyn Hospital.
Read before the Associated Physicians of Long Island, January 28, 1933.
(1) Twort, Lancet, Dec. 4, 1915.
(2) D'Herelle, Bull. et Mem. Soc. Nat. Deahir, 1930, vi. 986.

cultural effect obtained was due to the antiseptics contained in the product, and was the reason for the absence of the lytic principle.

FOR two years, bacteriophage has been used at the Brooklyn Hospital. It would be a fallacy to say that it is a panacea, but phenomenal results have been obtained in selected cases with a suitable phage. It is used mostly in cases of carbuncles, furunculosis, osteomyelitis, acne and sinusitis. Patients admitted to the hospital with a large carbuncle on the lip, chin or neck are given polyvalent staphylococcus phage directly into the center of the indurated area and into two or three places in the outer margin. This procedure, we observed, usually prevented the lesion from spreading. Although painful in the beginning, due to the pressure of the injection, the patient is soon relieved and the pain ameliorated. The amount given varies according to the size of the carbuncle—about 1 to 1½ cc. At the same time, ½ cc. of phage is given subcutaneously into the arm. A distinct drop in temperature is noticed and the mass softens with a watery pus drainage within 24 to 48 hours. An autogenous phage is prepared as soon as possible. The average duration of the patient's stay in the hospital is about one week.

In furunculosis the same procedure is followed except that all the small pustules or abscesses are injected with the bacteriophage. The injections are repeated at the rate of two to three per week till definite results are obtained. In the clinic only those cases are selected which have had repeated attacks of furunculosis and have persisted for long periods of time.

In osteomyelitis the most potent stock phage is used during the operation, autogenous phage prepared and used by direct local application and wet dressings, in addition to the subcutaneous injections.

SEVERAL cases of acne vulgaris (pustular type) have responded fairly well to the injections of autogenous phage. Cases of long standing, with no previous treatment, clear up more rapidly, whereas cases with much previous treatment, especially X-rays, show much more tenacity and results are obtained only after many repeated injections.

In acute and chronic sinusitis, mixed autogenous phage of the most prevalent strains of bacteria causing the infection is prepared and used with great success.

Bacteriophage is used not only for treatment but also for prophylaxis. A mixture of phage from the intestinal flora has been developed in our Department, at The Brooklyn Hospital, which is used in cases of ruptured appendices, peritonitis and in abdominal operations of long duration. The results obtained are most gratifying and it will soon be possible to give more detailed results.

Our literature abounds in the pro and con of bacteriophage but whether or not it is a living organism or a chemical enzyme, bacteriophage has a definite place in therapeutic medicine.

Two Necessities for Emergencies

Carbon Monoxide or Cyanide Poisoning: Intravenous solution: 50 c.c. of a sterile 1% aqueous solution of methylene blue. *Strychnine Poisoning.* An ampoule of sodium amytal 15½ grains, with accompanying ampoule of sterile water for intravenous injection.

The lucky doctor during this depression is the fellow who married a wealthy woman whose money was in trust.

Derangement of the Semilunar Cartilage

(Concluded from page 196)

he ever uses the split patellar approach, especially when he makes a diagnosis of internal cartilage tear and the external cartilage is found to be torn instead. I would also like to inquire if he has any objection to that approach."

DR. WILLIAM H. BARBER: "I have seen Dr. Courten's technic and am very much impressed by it. From what he said, of course, the most common thing is injury of the internal meniscus. He also spoke of the fat pads as a fairly common complication of injury to the meniscus or menisci. Then there are recurrent cases of synovitis. Isn't it a fact that in many cases a large medio-lateral incision would be wiser, perhaps not in Dr. Courten's hands, but in the hands of the general surgeon in these cases and to make an internal or external arthrotomy? It seems to me it would give one a better opportunity to see everything in the joint, so if it isn't a meniscus it may be one of the complications which may be of greater moment to the patient, and one would be in position to attack that. It is almost like doing a laparotomy for a chronic appendix and being prepared to do anything else that might be necessary in contradistinction to the small incision for an appendectomy that used to be the vogue. That just occurred to me. He did not spend much time on the medio-lateral or perhaps the medio-internal arthrotomy."

DR. HENRY C. COURTEN: "In regard to the split patellar or para-patellar incision, I have used both, but the diagnosis can be made so accurately as to whether it is an external or internal involvement that there is no object, to my mind, in making an incision seven or eight inches long when you can do the same thing through an incision two and a half inches long. With that incision, you can get a view of the internal condylar space, and you cannot get any more of a view of the internal condylar space through a split patellar incision than you can through this incision, by retracting slightly. I never have attempted to take out an external semilunar cartilage through an internal semilunar cartilage incision, but Sir Robert Jones claimed he did it in two cases. I spoke of the Jones incision: Sir Robert Jones did more of these operations up to a couple of years ago than any other man living or dead. He was well on toward 2,000. Back in 1910, I think, he reported 600, and he used an incision similar to this. I have prolonged the skin incisions down below the joint line and placed three incisions on a different line for the reason that synovial membrane will close over, in about 24 hours, so that it is impervious to infection from the outside, so in case you have any stitch infection in the skin wound you can be comparatively safe as far as the joint itself is concerned.

"As to the tourniquet: I have operated with and without tourniquets. I have never seen any complications arise from the use of a tourniquet in these cases, and it is certain it gives a clean field to work in. Without a tourniquet you cannot prevent the ooze that is constantly going into the joint and you will spend half your time wiping blood when you might be getting in and out of the wound.

"One of the main features in connection with this operation, or with any joint operation as a matter of fact, is to get in and get out rapidly. The less the joint is traumatized through handling, just as in the case of the gut, the less chance there is of postoperative effusion; that may not be infection, it may not be pus, but it will be postoperative effusion into the joint and the joint will blow up. That delays the convalescence, it throws down fibrin and you have to spend just that much more time in limbering up the joint.

"As to the term dislocation: you can get a dislocation without a fracture. Many of these cartilages are not fractured. There is a relaxation. They are torn slightly loose from the lateral ligament and the synovia and are carried into the joint as a whole. They are not actually fractured and yet they produce symptoms of locking.

"The question of locking has come up. I have referred to locking as anything that prevents full extension or flexion of the joint. If there is a dislocation of the posterior portion of the cartilage, the difficulty will be in getting flexion. If it is in the anterior portion, it will be in extending the joint. We had no cases of infection in this series. The eventual function was complete, and as I say, some of the younger patients went back to their occupations in three weeks, but the average case (Dr. Dealy's case was a rather rare one as far as time of disability is concerned) will run anywhere from five to six weeks, and that is very good time."

Lead Poisoning

X-rays of long bones will give valuable evidence in the diagnosis of chronic lead poisoning.

The One Neglected Field of Medical Practice

LeGrand Kerr, M.D., F.A.A.P.
CONSULTING PHYSICIAN TO THE METHODIST EPISCOPAL, THE SWEDISH AND ROCKAWAY BEACH HOSPITALS AND THE INDUSTRIAL HOME FOR CHILDREN IN BROOKLYN, N. Y.
Brooklyn, N. Y.

"WHERE may I go to have a complete medical examination and adjustment of associated problems and so keep myself mentally, physically and socially fit?" This question in varying form is daily propounded by parents of my patients. The wisest answer to this is priceless.

As late as 1905, with three or four notable exceptions, very desultory special care was given to the diseases and problems of children in Greater New York. Only three or four physicians devoted full time to that work; in Brooklyn not one did so until 1907. Sensing the situation I began then to devote my practice to pediatrics. Today in this populous borough there are many whose chief or sole work is in this field. They have signally contributed to the advancement and enrichment of this branch of medicine.

Just as desultory special care of children was general thirty years ago, a similar condition exists today regarding the adult of forty-five years or over who is not acutely ill and is without chronic disease. The individual acutely ill can readily obtain the best medical care science offers. One with a chronic disease is usually competently advised and placed under an observation most conducive to ultimate recovery or relief.

What of the man and woman who have misgivings concerning their general health, who are more or less disquieted about some apparently trivial symptom? Whether their anxiety is over some definite symptomatology, organic or functional in origin, or is a pure product of the imagination, it is of momentous concern to them. These perturbed people are what I am pleased to call healthy-sick folk. They are not receiving the medical advice and supervision that is their due. Their inward cry, repeated and importunate, is "Where may I go, what shall I do?"

THE fault lies partly within the profession but mainly with the laity. The physician with the mental and psychological equipment to successfully handle these patients usually is busy with acute disease requiring accurate and immediate medical or surgical advice. With the present-day demand upon his time, his skill and his study it is little wonder that he minimizes to himself and to his patient the importance of the less acute symptoms. The line of least resistance is to assure the complainant that the condition recited is to be expected with advancing years and that the proper attitude is to accept it. How often such a patient is dismissed with "Forget it and if you do not feel better come back—sometime." To use a common expression of the sporting world—they never "come back."

By our apparent disinterestedness in "trivial" matters (not trivial to him) we leave with the patient the suggestion not to bother his physician until there is emphatic, definite symptomatology. Be of good cheer and disregard them and so play the man is often his physician's mandate to him. Nevertheless, his ailments are real; psychologically real to him.

Life is not mere living or being efficient. Life is living with one's self happily and serviceably to one's neighbor or successfully in one's business. Those whom I have mentioned may be intensely unhappy while apparently healthy and efficient.

Rarely does a patient realize that the recital of what he wants to tell takes more than the time ordinarily consumed by the average consultation. Nor does he fully appreciate that a consideration of all of the factors which may enter into his problem takes more of the physician's time, skill and patience than the examination in ordinary acute or chronic disease. For this extra time and skill the average patient is not willing to pay because of the long established but short-sighted custom of the profession of charging for the examination rather than for the time spent on the examination. A deadlock follows—the physician cannot afford to give the extra time nor will the patient with good grace pay for it.

PERIODIC health examinations have only partially solved this problem of the man and woman over forty-five. The discovery of defects and recommendation for their correction is about as far as this periodic method goes. It gives no recognition to the problems involved if the patient become acutely ill, nor offers any adequate supervision or advice at that most important period when there exists a borderline between acute or chronic illness and a return to health. This particular period is a fertile breeder of psychoses. A situation thus exists calling for someone to correlate the past history, the habits, the peculiarities to the patient and all the surroundings as they may or do affect his condition.

This astoundingly large number of patients unsatisfied by their regular practitioners do not remain untreated. They become the victims of all kinds of charlatans who welcome their recitals. Many men and women have gone through life tortured by the dread of impending morbidity because someone has suggested that they have a murmur of the heart which he has not taken time to explain is functional or transitory. He has assumed that the patient's confidence is such, that if the physician treats it as of little concern the same feeling will be fostered by the patient. In our zeal to do the major, the important, we overlook the little, but our "little" is big and important to the patient. We who understand much about disease know little about folk.

The mind of the patient no longer functions happily. Walking all day amidst fears about body and mind he loses much of his sense of mental direction. Accustomed to perfect health and now abruptly brought face to face with a fear of some serious material impairment he cowers in increasing and unreasonable terror. The psychiatrist and psychoanalyist may help but their aid is limited. It is within the domain of the well trained general practitioner to render this greatly needed service.

TO serve these patients efficaciously calls for special qualifications, among them courage for an adventure in medicine and the courage to diplomatically

(Concluded on page 208)

The Color of The Blood As A Sign of Death*

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SINCE this audience comprises the legal as well as medical profession an attempt will be made to reduce technical terms to a minimum. Where such references must be made owing to the nature of the subject under consideration, demonstration will be offered by way of interpretation. Biochemical problems will be elucidated by the reaction of oxalated blood to various gases. Instrumental procedures will be explained by the assistance of motion pictures.

The scientific background of the sign of death to be offered for consideration is broad in its scope. Its practical application, however, is of the utmost simplicity. Failure to employ this procedure, not only as a measure of viability but to save life, might well be interpreted as an act of gross negligence.

The sign of death to be described is based upon a new means of proving that the heart has stopped, as evidenced by an unchanging cyanosis of the blood observed through the skin and the mucous membranes in the presence of intratracheal oxygen under pressure.

The conclusions to be drawn this evening are based upon an integration of anesthetic experiences accumulated during the last twenty years.

a) It was first observed that the color of the blood varied almost instantly with conditions which impeded or favored free respiration, i.e., the free interchange of atmospheric and blood gases.

THAT in the presence of a free respiration the color of the blood, that is the quality, not the quantity of the color, varied directly with the percentage of oxygen offered for respiration.

c) That while ordinary conditions are satisfactorily met by the 20% oxygen content of the atmospheric air, many conditions occur in which reduced rate or volume, as well as reduced absorbing surface, demand 50 to 100% concentration to produce full oxygenation.

d) It is assumed that the color of the circulating blood is directly dependent upon its relative oxygenation; that 100% oxygenation yields the typical cherry red; and that 0% oxygenation yields a deep claret color, which when seen through the skin or the mucous membranes appears as a dull blue or slate grey.

e) This color is, furthermore, due exclusively to a change in the iron (hemin) content of the red blood cells in which a loose combination known as oxyhemoglobin is formed.

f) A measure of this color was devised and was reported before the Society of Experimental Medicine and Biology in the spring of 1922. This measure of cyanosis was known as the Oxyhemoglobinometer.

g) In the asphyxia which precedes and accompanies death the oxygen of the circulation is gradually decreased until at death the oxygen saturation approaches 0.

h) The color of the blood as seen in the skin and lips closely indicates the oxygen content of the circulating blood.

i) A high percentage of oxygen thrown directly into the lungs in the absence of fluid or edema is instantly absorbed by the capillary circulation.

j) According to Lowery (*Principles of Human Physiology*, Philadephia, Lea and Febiger, 1915, p. 907), the absorptive power of the respiratory mechanism and its consequent sensitiveness will be seen in the following facts: area, 1,000 square feet; thickness of alveolar membrane .004 mm.; under ordinary conditions 6,083 cc. of oxygen can be absorbed in one minute, only one-eighteenth being required for the oxygenation of the organism.

k) If the heart is beating, however slowly or feebly, this oxygenated blood is carried to the capillaries beneath the lips and the skin at a rate proportionate to the vigor of the heart's action.

l) Normally, full oxygenation will occur in 5 to 10 seconds. If there is no change in color in 10 minutes, proof becomes available that the heart has ceased to beat during this interval and that the patient is dead.

IT is a routine experience in the practice of anesthesia and in the resuscitation of the asphyxiated that obstruction of the respiration by vomitus, blood, sea water, and relaxation or distortion of the soft parts are major causes of suboxidation, and that the removal of these causes of obstruction is indicated as a preliminary to any other treatment. One of the most remarkable and spectacular phenomena in physiology is the prompt change in the color of the patient when obstruction is removed. This phenomenon is not frequent in the conscious patient because of his effective struggle for self preservation and the activity of his protective reflexes.

The airway having been freed, the color is normal, provided the air breathed contains a sufficient amount of oxygen. A marked reduction results in distress, cyanosis and finally in a loss of consciousness.

This is seen in the relatively low oxygen content of high altitudes with its accompanying mountain sickness, as well as in the management of the gaseous anesthetics, nitrous oxide, ethylene, etc.

In the event of depression of the respiration in which both rate and volume is reduced, as in drug poisoning by morphine, etc., the patient will demand a higher than atmospheric oxygenation to maintain his color. Oxygen with CO_2 is then given with the double motive of stimulating the respiration and increasing the blood oxygen. When the absorbing surface of the lung is reduced by pneumonia, a higher concentration of oxygen must be given to overcome this deficiency. A constant atmosphere of 50% oxygen is in common use in the practice of oxygen therapy in Pneumonia.

THE color of the blood is due to the red blood corpuscles floating in a comparatively colorless (slightly yellow) serum. The coloring element hemoglobin has a strong affinity for oxygen, with which it combines to form oxyhemoglobin, which, however, exists in a loose combination. This combination is more easily broken up in the presence of CO_2 when present in due concentration (in accordance with the phenomenon described by Bohr). Normal blood quickly clots

* Read before the Society of Medical Jurisprudence, at the New York Academy of Medicine, February 13, 1933.

when released from its intravascular environment Potassium oxalate prevents this formation of clots and permits us to study the reaction of fluid blood to various gases.

Before us are three flasks. Each contains a quantity of oxalated blood. Through the first we bubble oxygen, through the second oxygen and carbon dioxide 10% through the third hydrogen, a neutral gas which serves to wash out the dissociable oxygen in the blood. At the conclusion of our talk the first flask will contain 100% oxygen saturation, the second will show the effect of an addition of 10% CO_2 to the oxygen added, the third will show a specimen practically free from dissociable oxygen.

The extremes A and B shown in the color disks which I hold in my hand formed the basis for the oxyhemoglobinometer, one of which I will circulate through the audience (*Proceedings Soc. for Exp. Biology and Medicine*, Vol. 19, pp. 1-5, 1922).

We therefore have a measure of cyanosis scientifically correct, in practice approximate, by which we may determine changes in the oxygen content of the blood.

While this instrument is offered as a means of measuring accurately varying degrees of cyanosis, it is so offered merely as providing the scientific background to which we have referred. It is not essential to the elucidation of the sign of death which we have under consideration. For in this sign the color change is marked or does not occur at all.

A POINT of extreme importance in the physics of color must here be noted. The color of an object depends upon the color in the light which illuminates it. Daylight contains the full spectrum and shows the full color value of an object. The ordinary electric Mazda light will show the value of red. On the other hand, the so-called daylight bulb is deficient in yellow which contains red, and is a continuous source of annoyance to the student of color.

While the term asphyxia originally referred to the pulse and the quality of the circulation, it has come to mean a state of respiratory embarrassment in which there is a varying degree of cyanosis. This cyanosis demands the immediate administration of oxygen. Many accidental conditions predispose to asphyxia, which in turn is the cause of death. These accidents fall very properly in the category of asphyxial deaths. Among these accidents are asphyxia neonatorum, illuminating gas, submersion, drug poisoning, electric shock, foreign body obstructions, poliomyelitis, anesthesia both local and general, antenatal and postnatal atelectasis and the pneumonias of the new born.

The color of the blood as seen under the mucous membrane of the lips and under the skin indicates quite closely the state of the oxygen content of the circulating blood when variations are allowed for the thickness of the skin, and the stasis of the florid in a dependent position as well as stasis of the capillary circulation accompanying chilling.

OXYGEN treatment to be effective must reach those membranes through which it is to be absorbed, i.e., the lining membrane of the lung (applied to the face against respiratory obstruction it cannot be so absorbed). If the patient is breathing, oxygen by a mask or by a throat tube will suffice. But in the apneic, apparently dead patient, oxygen so applied will not reach the absorbing surface. To accomplish this end a technique now approved by the American College of Surgeons was devised by the speaker. This technique has been repeatedly reported in the medical press of 1932 as a part of the proceedings of the New York State Medical Society.

A motion picture describing the method under consideration will now be shown.

(The motion picture having been shown the blood specimen previously referred to were now examined.)

In conclusion let us refer once more to the specimens of oxylated blood through which we have been bubbling oxygen, oxygen and carbon dioxide, and hydrogen. It will immediately be seen that the oxygen specimen is brilliant red, that there is no appreciable difference between the oxygen and the oxygen CO_2 specimen, but that the hydrogen specimen is a dark claret or maroon. If we were to examine this specimen chemically we would find that the only change which has occurred has been a washing out of the oxygen. Let us now suppose that this deoxygenated blood instead of being contained in this flask was present in the small superficial blood vessels. Seen through the skin or the mucous membranes this maroon looks pale blue or grey. Let us further imagine that we insufflate such an apparently dead patient. The heart, however, is still beating so slowly and feebly that it cannot be heard by a stethoscope. It, however, is still capable of moving the blood from the lungs to the heart and from the heart to the periphery. We therefore observe the change which now becomes apparent when I blow oxygen through this flask. The color of the blood changes, the skin becomes less blue and gradually pink. Should the heart have ceased to function no change will be observed regardless of the pressure or the duration of oxygen insufflation.

Discussion

DR. RUTH SULLIVAN: As a chemist, I would like to say that cyanosis is directly dependent on the degree of saturation of the blood with oxygen. Normally we have a saturation of 95 per cent. in arterial blood; with a decrease to 85 per cent. saturation, cyanosis appears. I want to compliment Dr. Flagg on his clever adaptation of this chemical principle.

DR. LEON T. LE WALD: I just want to confirm what Dr. Flagg mentioned in his last remarks. Many of you saw, perhaps, in the newspapers not long ago, in fact, under date of January 19, 1933, the heading "Hospital Morgue Gets a Living Boy." That appealed to me particularly because I have seen two cases come to life, or rather, they were not dead, in a morgue, and it is not too far-fetched occasionally to say that such a circumstance may happen. I do not know anything about the final outcome of the case reported in the newspaper of a sixteen year old boy in a sanitarium who lived two days after he was supposed to have been dead. These cases very often are *in extremis*, and it may be only a short prolongation of life is possible, but of course it is one's duty to do that much. This was true in one of the two cases I saw, a patient who had been ill with a cardionephritic condition. I have no doubt that the patient was *in extremis* when last seen by the nurse, and was then sent to the mortuary, but about six hours later was found to be alive, and was returned to the hospital, finally succumbing after about 24 hours. The other case I know of was one of new-born twins, attended by a midwife. The first one born was truly stillborn, and did not recover. The second twin was also considered to be dead, and the father was directed to take the two infants to the morgue. About six or eight hours later it was discovered that the *second* one of the twins was alive. I was present myself, and, in fact, made the discovery. The patient was immediately taken to the hospital and placed in an incubator, under the most favorable conditions, but did not survive long. However, the procedure described by Dr. Flagg was not done, and I think if it had been instituted, the baby might perhaps have survived, in spite of the exposure, but those are rare exceptions, of course. Nevertheless, they are true cases, and I feel that Dr. Flagg has rendered a great service in making this demonstration to us. Just how he would formulate directions in hospitals to determine whether his procedure should be put into effect or not, and how it could be carried out at the present time without doing it unnecessarily, are things I would like to ask Dr. Flagg. He suggests that all cases of supposed asphyxiation, such as we see from foreign bodies in the air passages, and I have seen a number of these myself, and also cases of drowning, should

have this procedure instituted. I certainly agree with him.

JEROME ALEXANDER, ESQ.: In arising to express my appreciation of Dr. Flagg's interesting paper, I wonder whether he would inform us on two other points: first, is it possible, as we read sometimes, that people may still be brought back from death even after the heart has stopped beating? I have heard of cases of this kind. Second, could he tell us something about carbon monoxide poisoning, and possibly extend his remarks to include the so-called poison cases?

DR. FRANK WADE ROBERTSON: I would like to ask if Dr. Flagg can instance any patients who have been saved after strangulation. What I am after is to ascertain how long the heart can beat in strangulation cases and still be revived, as he proposes. Dr. Flagg may have spoken of that earlier in the evening, but unfortunately I was late in arriving. It all depends on whether the heart is beating or not, and I am seeking information as to how long the heart has been known to beat in strangulation cases.

DR. GEORGE I. SWETLOW: While listening to the presentation of this interesting paper, the question arose in my mind as to what need there was for a new test to determine whether or not a man is dead or alive. The old concept is unsatisfactory: that if a man's heart stops beating, he is dead. There are a whole series of tests that have been utilized for such determination.

Apropos of the question just raised as to strangulation: it is a known fact that following decapitation of criminals the heart has been examined 30 and 60 minutes later and found beating. In cases where strangulation was instituted as a means of penology, an autopsy after 20 minutes revealed the heart to be still beating. Thus it is clear that a beating, pulsating heart is not indicative of death or life.

We also know that even as long as two hours after death, the pupils of the eye can still respond to instillations of atropin. It is known that after death, within two hours, we can stimulate muscles to respond by applying an electric current. The response may be similar to that seen in living tissues. Thus this test helps very little.

As far as respiration is concerned, we say that when a man stops breathing, he is dead. Let us see whether that is true. We know that in catalepsy, the breathing may drop to such a point that by no means can you determine if the person is breathing. You can find in such cases no aid in the mirror test, nor will the stethoscope be of avail. Yet the subject is quite alive. We can hypnotize an individual and bring him down to a similar state. In deep comas, the color may go from the patient's face, his breathing may be cut down to practically nil, and yet we know that he lives.

Sometimes, looking into the eyegrounds may be of assistance. The nerve head becomes very pale, the arteries lose their identity: however, the veins still stand out—a good test.

Another test that has been used is the so-called resorcinphthalein test. Here resorcin is introduced into the skin. If the individual is alive, you get a yellowish color of the cornea. When he is dead, there is no such color.

I think when you come down to a final analysis, we must admit that we have no definite test as to death. I recall very distinctly years ago, while working in the Department of Health, a case of asphyxia was admitted which caused confusion in my mind. A child was brought in with a retropharyngeal abscess. After opening the abscess, I turned away for a moment. During that very moment, the child stopped breathing. I worked over it and decided the child was dead. I sat down at the desk and started to make out the certificate. But I looked over the table and thought the child was not dead, so I went back and worked over it again. Then I thought it was dead, and continued to write the certificate again. I must have done this six or seven times, before I finally signed the child out. Ordinarily, my procedure would have been to leave the ward and come back later. I did not do so, and started to read while the nurse was arranging the child. I assure you that I was back ten or fifteen times listening to the heart and turning the child over, before I was sure it was dead. I really was not certain until the next morning that he was really dead. As I observed the body, I could see the color and general appearance. I assure you that you would believe that the heart was beating. Yet it was not. As I see it, we have still no method with which we can tell quickly in an emergency without these tanks, and without a laryngoscope, and without such a long procedure, whether an individual is dead or not.

The method described in the paper of this evening is probably a fine method inside a hospital, but I still think we have no method whereby we can quickly get information as to whether we are dealing with a live or dead individual. Thus, if at the seashore, or wherever you may be, do not assume that the person is dead because you do not see breathing or because you do not feel the heart beating. The individual may still be alive. Continue to make efforts at resuscitation.

DR. THOMAS C. CHALMERS: I want to congratulate Dr. Flagg on his interesting presentation. I have taken a great deal of interest in it, for I have known the doctor since he was a student, and have had him on a great many cases of mine which have had to be operated on, and also for all the members of my own family. His development of the color was exceedingly interesting to me, because for years when he has given anesthesia to any patient of mine, more often in later years, I have watched him develop this color scheme, and I feel that what Dr. Flagg has presented to the profession tonight, while I cannot see how it can be practical perhaps for the general practitioner, can be of great use on an ambulance and in hospitals, or where within a reasonable time the man who is properly equipped to give his treatment, and who knows the technique of it, can be gotten hold of. In that way many lives, especially of the newborn, can be saved. I want to congratulate the Society on having had the opportunity to hear Dr. Flagg.

DR. HOWARD NEAIL: I arise to express my appreciation of being able to hear Dr. Flagg speak on this interesting subject. I have known him for many years, and I heartily appreciate what he has done for me. Perhaps he does not remember that, but having been intimately associated, directly or indirectly, with death for some twenty-two years, I question some of the statements of Dr. Flagg. For instance, he told us that asphyxia was a cause of death. Do any of us know the cause of death? Having done thousands of autopsies, I find that we do not and cannot recognize the cause of death in from two to four per cent. of the cases autopsied. There is no apparent reason why the individual is dead. Here we have a case of asphyxia, carbon monoxide that the individual has been exposed to for some twenty or thirty minutes, or hours, and has died, and we have another individual who has had an equal number of hours' or minutes' exposure, and has lived. We have an individual with a certain heart condition. He has died. On autopsy we find his heart condition of rather a trivial nature—slight coronary sclerosis, or a slight heart lesion. Another individual that we autopsy presents a heart with a pathology that has lasted for years. Do we know the cause of death? I question it. We say an individual dies of pneumonia. Does he die of pneumonia? What happens in that particular individual to cause his death? We know certain facts about life and death. We know that man lives. His culture, of course, was very limited five hundred thousand years ago. But we know that he lived to about the same age we live, because we have found his remains, and can tell from his teeth that that individual lived approximately so many years. It seems it has been decreed that man shall live a limited number of years. So is it with all other living things. As a class, they have a certain number of years allotted to them, but different families of that class, curious to say, live longer than their cousins or other distant relatives. Take birds, for instance: why should a goose live to be a hundred years old, and a chicken die at the age of fifteen? It is a peculiar phenomenon, and the question has arisen in my mind many times whether or not there are laws, complicated and complex as they may be, that control our destiny—the individual destiny of a man. Every science has such laws, physics and chemistry, and so forth, but undoubtedly due to the complexity of the thing, I have not been able to satisfy myself what happens in a particular individual to cause his death. There are so many factors, though people do die, undoubtedly. Dr. Flagg's idea, I think, is a decided step in advance in these asphyxia cases. The old pulmotor idea was good at the time, but Dr. Flagg's mechanics is certainly a lot better than it, and I wish to thank him for the wonderful talk he has given us.

DR. FLAGG (closing the discussion): I wish to say that one reason for coming here was to find out something about this color sign; I have found out more about it than I ever knew before. My personal friends would not tell me what they thought, and I am delighted to have so many points brought out, and to clear up several matters which evidently were not made clear at the time of the presentation.

The historical background of the signs of death is so extensive and requires such an intimate knowledge of the subject that I purposely left it out altogether. I realize quite well that the color sign which I have suggested is merely a corroborative sign. It is by no means intended to take the place of other signs. This sign is one which may be elicited under favorable circumstances. These circumstances are brought out very vividly in almost every daily paper at least once a week, in the detailed description of the life-saving squad working for eight or ten hours over a patient with an inhalator. They work very hard for ten hours, and the patients still die. In other words, they were very dead ten minutes after they started, and there

was no way of determining that fact even though all the facilities for intratracheal insufflation were present. Under these conditions the sign means saving of man power and oxygen. I found myself upon just such a case at Coney Island. This patient was an old woman who had been taken out of a kitchen in which she had been overcome by gas; the police squad were doing the prone-pressure method with the inhalator. We exposed her larynx without the least difficulty. I demonstrated her larynx to the policemen. They were delighted, because they had never seen a larynx before; we used oxygen and CO_2, and carried on intratracheal insufflation without any difficulty—all the time she was perfectly dead, and we knew it. The corneal and all other reflexes were absent—there was, of course, no response whatever.

Another case which may come to your minds was one in which a well known surgeon, who was operating on a patient, died during the course of the operation. I happened to be present—the only other medical man in this team. The surgeon was feeling rather out of sorts, and the nurse suggested he go out and get a little air. He said he would continue, and the first thing I knew, I saw him put his head down on the patient, and roll over on the floor. Within thirty seconds I was to him, and I laryngoscoped him and put a tube in his glottis and blew into it. This was all in less than a minute. He was completely relaxed. I blew into his chest, there being no oxygen available. At the end of my insufflation, he gave a little catch, but did not breathe. This was evidently a clear case of cardiac failure. I felt, however, that he had had everything possible in the way of treatment. It was out of the question to resuscitate his cardiac failure; respiratory obstruction, however, had been eliminated.

In regard to children, I think if you can laryngoscope them, you will observe a phenomenon that is rather common in cases that are deprived of oxygen, but not completely asphyxiated (you would call them apparently dead), and that is the tone of the glottis—a very slight tone of the vocal cords on irritation by intubation. One sees this frequently in the newborn. If a newborn baby who is laryngoscoped shows no response whatever to an intratracheal tube, that baby is very sick, and there is not much chance of its coming back. If there is any tendency for the cords to grasp the tube, resuscitation is simple. In the case of the youngster which Dr. Swetlow mentioned, I think if he had been laryngoscoped, you would have found there would have been some tone, and on insufflation, he probably would have picked himself up, and he would have lived. As it was, he overcame his partial obstruction for several periods, but he could not quite make it, because the obstruction was more than his ability to overcome it.

There is a phenomenon which comes out in the respiratory response of these resuscitated patients. In a patient who has been completely asphyxiated, whose heart is still beating, we find the respirations return not by a deep respiratory effort, but by a very shallow panting, which increases in depth as the O and CO_2 affect and stimulate the center. Another point which is very important is the effect of CO_2 on the respiratory center as a direct stimulant. I had a patient whom I frequently refer to. I was called to see this patient who was operated on in the morning, and I found her in her bed in a sanitarium, surrounded by her family, and the house staff trying to administer oxygen by funnel. She was dusky, breathing about once a minute, and she was on her way out. I laryngoscoped her without any difficulty. When I put the tube in place, I thought there might be a clot present which she had inhaled, but her airway was clear (most of the foreign bodies which are inhaled can be taken out by suction or forceps). This patient responded immediately to the oxygen insufflation, the color changed from a dusky one to a pink, and then I heard the respiration coming up. It was so rapid and shallow that another observer thought it was the pulse. Soon she was quite all right, and then the oxygen ran out. I sent down for more, and they brought up a tank, which I connected up. The patient started to go bad. In other words, the color sign warned us that something was wrong. I looked down and found that I had been given a tank of nitrous oxide. We disconnected this very promptly, and put her back on the oxygen which remained in the room—oxygen from the low pressure tanks. The color picked up, but the respirations did not. We got our CO_2 tank and the respirations promptly came up, and she was joking with the surgeon within fifteen minutes.

The color sign is merely complementary to everything else we have to prove death. The practical use of this technique, as I tried to point out—I gather rather unsuccessfully, is that it is simple. All this paraphernalia for demonstration is merely to provide some idea of the background on which these premises are built. All one really needs is a laryngoscope and a tube. I believe that the question of resuscitation in asphyxia cases turns on the popularization of about two inches of airway—two inches between the glottis and the vocal cords. If we can make that area of the respiratory tract popular, we will promptly save at least 10 and perhaps 25 per cent of these asphyxiated patients. There is probably not one medical man in five hundred who has ever seen a glottis, or who has any idea of being able to see it. The reason is that there is no differentiation made been the asphyxiated subject and the ordinary patient who is bronchoscoped. It has been assumed when you use a laryngoscope that you are going to meet a certain set of difficulties which you cannot avoid. These difficulties, the muscle tones and reflexes, disappear with the asphyxial state. If every medical man could be instructed, as he should be, to expose that two inches of airway we would save a great number of these asphyxial patients.

I did not intend to imply that all death was from asphyxia. On the other hand, in asphyxia, death frequently follows. It has been said "Everybody dies of shortness of breath". We make our determination of asphyxial death by asking "what is the first and accepted treatment of this case?" If the first and accepted treatment is artificial respiration, as it is in suffocation, and illuminating gas, and asphyxia neonatorum, if artificial respiration is not carried out, the patients die, and they die from asphyxia, therefore they may be considered asphyxial deaths. It is the failure to recognize the total volume of asphyxia, combined with the unfamiliarity of that two inches of airway, which has brought us face to face with this tremendous mortality of 1000 a week.

In regard to the time which a person can live after strangulation, I do not know. We are hoping to get accurate statistical figures of these deaths. That is one of the functions of the Society which I represent. We wish to learn something about this problem. We do not know much about it.

To conclude, the color sign is a corroborative sign which is available for use by any practitioner who will take the trouble to learn how to use the laryngoscope. Oxygen may or may not be available. If not, you can use an ordinary tube and blow into that patient.

There has been such an interested and generous discussion that I fear I may have missed a number of points in my closing remarks. Should this be the case, I shall be glad to take up these points privately, or at some subsequent meeting, if they are brought to my attention.

The One Neglected Field of Medical Practice

(Concluded from page 204)

counsel and if need be warn the patient and always to place the responsibility where it belongs—with the patient. All the while bear in mind his emotional and mental status. Be not wanting in patience to hear the whole story, much of it a recital of things that are unreal, in fact, but real to the reciter. Discrimination would be required in marked degree. Retain all the essentials, of course, and eliminate the non-essentials, but not without convincing the patient that they are actually non-essentials. By all means conserve the religious faith of the patient. It will aid his physical and emotional well-being and give him soul contentment. To recognize the earliest intimations of disease or emotional disturbance and prescribe corrective measures demands a very high order of professional equipment.

This inventory of qualifications includes: first, an emphatic recognition of the need of this work; second, faith in one's own ability and resourcefulness to carry it on; third and most important of all, the adoption of it as the controlling purpose of one's medical career.

If life is to be further lengthened and morbidity further limited it will have to be among this class of patients. The benefits of medical science have already been bestowed in praiseworthy proportions upon children and young adults and upon the period of advancing senility. It is very meet, right and proper to as generously lavish them upon men and women between the ages of forty-five and three score years and ten who are not acutely or chronically ill.

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Cancer

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The Precancerous Lesions of the Skin*

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THERE may be some criticism on the part of pathologists regarding the use of the term "precancerous," as it may be reasonably argued that lesions are either cancerous or not. There are, however, a number of skin lesions which we know from clinical experience may be benign in their early stages but later tend, in a rather high percentage of cases, to become malignant. For purposes of discussion, I shall divide these lesions roughly into five groups.

The first group are those which consist essentially of hyperkeratotic changes involving primarily the sebaceous glands. The first of these are senile keratoses. These are localized rough hyperkeratotic lesions which are prone to occur in old age or in those past middle life. The sites of predilection are the backs of the hands, face and ears. In addition to age, predisposing causes are probably long continued exposure to sunlight, wind and changes of temperature. The lesions are at first small brownish or tan colored spots which are often mistaken by the patient for "liver spots". Gradually they become rough and slightly elevated. This process continues until crusting and scab formation take place. At this stage, there is often pathologic evidence of malignancy.

Closely related to the senile keratoses are seborrhoeic keratoses. This type consists of a greasy fawn colored patch usually confined to the back and chest. They may occur in younger individuals than senile keratoses. They occur most frequently in those of seborrheic make-up. They do not become malignant so frequently as the senile keratoses.

Cutaneous horns are hypertrophic deposits of keratin, which may develop upon a seborrhoeic lesion. They often form into rather long horn-like projections at the base of which malignant changes occasionally occur. They are found most frequently about the eyelids, temples and cheeks.

MULTIPLE benign cystic epitheliomata is the name given to small pearl colored translucent lesions which are, pathologically, adenoma of the sebaceous glands. They occur more frequently in women than in men and may develop in certain families, suggesting a hereditary tendency. They often develop about the age of puberty. While the pathology is suggestive of epithelioma, clinically, they remain benign almost indefinitely. Occasionally, one of the larger lesions will become crusted and assume a certain degree of activity.

All of the lesions mentioned so far can usually be treated successfully by destruction with fulguration or diathermy. The choice between these two measures will depend upon the size and degree of malignancy of the lesion.

Most of the lesions in this group respond very satisfactorily to treatment and, if malignant change has taken place, it is likely to be of the basal cell type. One notable exception to this is the senile keratoses on the backs of the hands. These, for some reason, quite frequently are of the squamous cell type and radical excision with the diathermy knife is often indicated.

Sebaceous cysts may occasionally result in malignant changes. An attempt should be made to remove the sac in its entirety. The sebaceous cysts of the scalp, or wens, are as a rule very well encapsulated and can be removed without difficulty and usually without fear of recurrence. Those situated on other parts of the body, particularly around the chest and back, may be more or less adherent to the surrounding tissue. Superficial cauterization may be indicated in these cases.

THE second group are those lesions which are essentially of the tumor type. First of these are warts. There are two principal types of warts. The seed warts or verrucae vulgaris, and the flat, or juvenile warts. Malignancy is rare in either of these types, although occasionally instances have been recorded. I had felt that warts at least were one type of lesion which I could consider benign but was surprised on at least one occasion to find a large wart which presented the undoubted picture of malignancy.

A great deal has been said in regard to the danger of removal of moles. In many cases, they are objectionable from a cosmetic point of view and their removal is desirable if it can be done safely. Personally, I feel there is practically no danger in the removal of fleshy or sebaceous moles. I have removed thousands of them and there has not been to my knowledge any evidency of malignancy resulting from their removal. Pigmented moles probably present a problem of more serious moment, although I do not hesitate to remove the ordinary brown pigmented mole. There are a few rather rare purplish blue moles which are often extremely malignant and belong to the melano-sarcoma or melano-carcinoma group. Moles of this type are sufficiently suggestive of malignancy to demand a rather wide excision. I believe any of these moles should be removed completely if anything is done and no attempt

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should be made to treat them by caustics, or by ineffectual electrical applications. Enthusiasm may be carried too far, however. I recall one case of a young débutante who had two ordinary brown moles on her back. The operator, having been imbued with the danger of removing pigmented lesions, excised an area about one inch in diameter around each lesion. The result was a very disfiguring keloid, where I believe a perfect cosmetic result would have been obtained with safety by much less drastic measures.

Molluscum bodies are of a benign nature, although where single lesions appear it may be very difficult to distinguish them from the early crateriform type of squamous cell epithelioma. Once this point of diagnosis has been settled, I believe malignancy rarely if ever takes place in molluscum bodies.

THE third group are those lesions which are characterized by hypersensitiveness to, or are influenced by over-treatment with, some type of light rays. Xeroderma pigmentosum is a congenital hypersensitiveness to sunlight in which changes take place very similar to X-ray atrophy. Eventually keratotic ulcers develop in a great many cases and malignant changes are not infrequent. Destruction of any such malignant lesions by diathermy is indicated and precautionary measures should be taken to protect the individual from sunlight. A similar type of trouble is known as hydroa aestevale. This is also a hypersensitiveness to sunlight, but this usually occurs only in Summer when the individual is exposed directly to strong sunlight. It manifests itself by crops of vesicles and bullous lesions, usually around the face and ears. As these lesions disappear, pock-like scars remain. It usually does not result in the atrophy and telangiectasia seen in xeroderma pigmentosum. Malignant changes, however, may result if the patient is not properly protected from the sun's rays.

X-ray and radium burns are always potential sources of malignancy and where injury from these agents results in ulceration, they should be kept under long continued observation. If any suspicious changes appear, such as a hypertrophic border or tendency to extension, the entire atrophic area should be excised. It may be necessary to follow up this procedure with skin grafting.

THE fourth group consists of malignant changes which are secondary to diseases of more or less systemic origin. First of these is lupus erythematosus. Undoubtedly a great many cases of malignancy secondary to lupus erythematosus are the result of over enthusiasm in treating this condition by means of X-ray. This method of treatment is somewhat in disfavor at the present time, but in past years has been used extensively. However, this is not the only factor, as cases occur where X-ray treatment has not been used. This is particularly true of the chronic localized type of lupus erythematosus.

Only in the past year, we have seen a long standing case in which an extremely satisfactory result was obtained in the treatment of the disease only to have the patient die later from a squamous cell epithelioma, which developed on the lobe of the ear with extension to the glands of the neck.

Lupus vulgaris, which is a true tuberculosis of the skin, may also be a site for the development of malignant lesions. These cases are extremely chronic and resistant to treatment and difficulty may be experienced in noting the transition from tuberculosis to a malignant type of lesion. Surgery or diathermy treatment, when practicable, offers most in these cases.

THERE are two other conditions I wish to mention. namely, mycosis fungoides and leukaemia cutis. Mycosis fungoides is probably essentially neoplastic in nature from the first. In the primary stage, however, it presents a superficial scaling lesion which may be indistinguishable from an ordinary dermatitis. The localization of the lesions, intense itching and chronicity are suggestive, however, of its probable nature. In the later stages, when fungating tumor masses develop, the diagnosis is obvious and may be verified by biopsy. The usual extensive involvement makes local removal impracticable. Palliative treatment by X-ray is about all that can be accomplished and a fatal termination is almost inevitable.

Leukaemia cutis manifests itself in two forms, first, the true leukaemic infiltration of the skin, and second, a toxic type of erythema. The characteristic blood picture together with biopsy sections will usually establish the diagnosis. True leukaemia cutis is extremely radiosensitive and temporary improvement can usually be obtained by even small doses of X-ray. Recurrences, however, are almost sure to take place. Even if the skin lesions remain clear, the patient will probably die eventually from some other manifestation of the disease.

IN the last group, I have placed a few miscellaneous lesions which may become malignant. One of these is the birthmark. As a rule, the ordinary angioma or port-wine birthmark shows no tendency toward malignancy. There is a type, however, which is usually unilateral, having a more or less herpetiform distribution which consists of pigmented verrucous areas interspersed with purplish nodules. These may remain dormant indefinitely but occasionally changes take place in the nature of a melanotic sarcoma or carcinoma.

Paget's disease of the nipple is almost always malignant. In fact, the presence of either superficial or deep seated malignant changes determines whether or not the diagnosis of Paget's disease shall be made. A radical breast amputation is probably the best procedure once the diagnosis is established. Cases of eczema of the nipple or ringworm infections in this area may very closely simulate true Paget's disease. In fact, objectively they may be almost identical. A persistent eczema of the nipple, particularly if it is unilateral, should arouse suspicion as to the possibility of Paget's disease.

Leukoplakia and kraurosis vulvae are frequently forerunners of malignancy. Leukoplakia may originate in an old syphilitic infection or may possibly result from chronic irritation such as is produced in pruritus from various causes. Radium may be used on these lesions, although the response is usually not striking. If the leukoplakia is well localized, it can be destroyed by diathermy.

KRAUROSIS is usually an accompaniment of old age in which atrophy of the skin and mucous membrane takes place. This type of skin is susceptible to trauma, and injuries and trophic ulceration may eventually develop lesions of a malignant nature. All types of malignancy or premalignant conditions on the skin afford a much more favorable outlook than similar lesions of internal organs. This is obviously true because of the fact that they can be seen in their earliest stages and treatment can be started in the incipient stage.

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Economics

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The General Practitioner

FOR more than a generation past has there been an ever increasing vocal expression of the skill, the untiring devotion, the physical and mental self sacrifice through long hours of day and night of the general practitioner. Specially loud has been the appreciation of his care of the poor, of his lack of personal financial sense when confronted with the sick man's welfare, and, formerly, of the services freely given by him to institutions for those sick poor who could not elsewhere obtain help. In the mouths of the public speakers no words are too laudatory—in their hearts, one might think, are the deeds of the doctors deeply enshrined. Despite all the lip praise very little material appreciation can be found. Sufficient income to assure his existence, the prevention of abuses of his charity, the suppression of competing bodies in his field whether the bodies be those of the cults, social workers, foundations, clinics, hospitals or governments have been given little attention. Although one may ever hear of the duties of the general practitioner and his need of ever-increasing educational requirements one rarely hears from any of these groups, definitely expressed in terms of money, the returns that a doctor should receive who has devoted all his years to and through early manhood to intensive preparation, who has expended over $25,000 in that time for his training and who, after that, gives a full day of highest grade work to the people! From governments, from industries, from many people the question comes, for how little money can the necessary service be obtained?

It is not surprising that the general practitioner has been dying out. It is not surprising that so many of the younger doctors in these past years so early in their careers enter the ranks of specialists. Although the need for them is urgent, less than 45% of the doctors of the United States are full time general practitioners. One benefit that may accrue from the present financial situation will be the correction of the preponderance of specialists and the restoration of the general practitioner to his rightful place of importance and predominance. The place and need of the real specialist is assured. His great technical skill and his vast amount of knowledge of his subject, obtained only through years of work, entitle him to his credit and a commensurate fee. The so-called specialist who has simply restricted his work, who has not qualified by long arduous training but whose incentives have been an easier life and fees equal to those of the best men in his line, could easily have been of more service to himself and the community if he had become a good general practitioner. With the so-called specialist the general practitioner is going to enter into more conflict. It is conceded that 85% of all ailments are in the province of the general practitioner. Very many more of the ailments could be in his province if a small amount of extra study and time were given by him to the acquisition of the use of instruments of precision in diagnosis and treatment. Here the dispensary could be of real help. A service of comparatively short time rotating through all the specialties would be sufficient.

It should not take a long period of time in each branch to make him proficient to do routine work of that specialty in his practice and to judge of the work of the most skilled. The widened experience of all the branches would give him a better vision of them all and test his aptitude and desires for later exclusively special work. There seems little justification for the long years spent by a doctor in a special service of a dispensary. The dispensary doctor should pause long enough to take an account of his work. He should learn whether he is receiving at all times, in some way, full return for the time and energy he spends or if the reward is only in anticipation. In these days of so many "open" hospitals and private sanatoria the old arguments for very many years of restricted subordinate work in dispensaries are no longer tenable.

The fees of a general practitioner should be fixed as are those of a real specialist. They should in no way be based on the particular part of the body treated. That basis would fix his fees at many times that of the man who treats only a part of the body. His fees should be based on his knowledge, his experience and, above all else, on his judgment. The attempt, far too successful, to relegate the general practitioner to some subordinate position and to poor, unjust renumeration must be corrected for the good of the community more than for the doctor. Personal individual care given to a sick person by the physician of his choice will ever be the most widely needed, the most valuable, and most frequently will it be best secured from the general practitioner. In addition to increasing his knowledge of specialties the general practitioner will be able to increase the number of fields and scope of his activities. He should insist on his individual share of public health work, of his share in the prevention of epidemic diseases, and proper payment for all of his work. This doctor should have time, as he has the ability, to do a great deal of the laboratory work needed by his patients, and his patient will benefit by the quality of work done by the man best fitted to evaluate laboratory results in that case.

Recent study has shown the weak points in the much vaunted group practice. The great reduction in overhead expenses of a group is not what has been stated. There are still many advantages in location of one's office in the home, not the least of which is the economy of time as well as money. Particularly is this true in sections apart from the crowded metropolitan areas, to which sections many of the young men are wisely turning.

It is encouraging to read present-day reports of the presidents of medical schools telling of the efforts being put forth to make their students skilled general practitioners, and of the recently increasing percentage of their classes devoting themselves to that work. It must never be forgotten that while the first consideration

Sprue: Report of a Case

MALFORD W. THEWLIS, M.D.
Wakefield, R. I.

A WOMAN, aged 65, was in Puerto Rico in 1908. In 1926 she had pains over the appendix, and abdominal distention. In 1929 she showed evidences of pernicious anemia, a raw mouth and raw anus, and frothy diarrhea. Her weight dropped from 135 to 100 pounds. On liver diet she recovered and has remained fairly well ever since. At times she now has sudden attacks of diarrhea, which last for some time. There is no muscular wasting. Hemoglobin 90%, red corpuscles 4,100,000 and whites 10,400. Blood smear does not show any abnormal changes since liver was given.

Sprue, in this instance, came twenty-one years after she spent twenty-six months in Puerto Rico. In some instances the disease does not manifest itself for twenty-five years after exposure.

The diagnosis is made from idiopathic pernicious anemia by the fact that the mouth and anus are more raw than with anemia; there is no muscular wasting and diarrhea is persistent.

The treatment is dietary. Intramuscular injections of liver extract once a week, iron for secondary anemia, and a diet containing carbohydrates and little meats and fruits, for diarrhea. Vitamin B may be added to the diet.

Cancer

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Unless patients are grossly negligent or unless the lesions are of a high grade of malignancy, comparatively few fatalities should occur in skin cancers. Fortunately, the majority of cases which we see and which we have enumerated are of the basal cell type which spread only by extension and usually not by metastasis. The hope of permanent cure is therefore exceedingly good.

It is, in fact, rather the exception than the rule in which we fail to cure these conditions if they are seen in comparatively early stages.

Most of the difficulties arise from the group of pigmented lesions and from the squamous cell type of carcinoma. The latter are encountered most commonly in lesions of the vulva, penis and (occasionally) face. I shall not speak of epitheliomas of the lip, in which group the highest mortality exists, as this subject does not fall within the scope of this paper.

Finally, I should like to stress two points. First, that skin malignancies, because of their location, can be diagnosed early. If people learn to take care of them early, results should be good.

Second, that in the majority of these lesions desiccation, diathermy, coagulation or the cutting diathermy knife offer methods which are quick, certain and inexpensive. Except in a few selected cases, we feel they are superior to radium or X-ray therapy.

Discussion

MILTON V. RAPP, M.D., Dermatologist, St. Mary's Hospital, Rochester, N. Y.: The ultimate cause of cancer is not known, but the outstanding factor in the etiology of cancer is chronic irritation, whether it be physical, chemical, or mechanical. To quote James Ewing:

"From the practical standpoint, irritation is the most important factor, and all other influences, such as heredity or local predisposition, are secondary. The tumor arises from previously normal epithelium after a period of over-nutrition and overgrowth, during which the subepithelial tissues become altered and less resistant. Lymphocytic infiltration, swelling with mucoid or other forms of degeneration, followed by atrophy of elastic tissue and chronic edema, or fibrosis, usually, but not always, precede the downward growth of epithelium. Yet, the controlling influence must, I believe, be regarded as inherent in the epithelial cell. It is only necessary to supply the proper conditions."

A precancerous condition is one that will inevitably become cancerous. Is there such a condition? Is one justified in stating that any or the most likely condition will necessarily acquire malignancy? I think not. On the other hand, cancers arise on all conditions of the skin.

These so-called precancerous lesions can be divided into two groups:

1. Conditions on which cancers arise, but which cannot, in themselves, be considered as conducive to malignancy:
   (a) *Lupus Vulgaris;* (b) *Psoriasis,* particularly after irradiation; (c) *Syphilis.*
2. Dermatoses which not infrequently become cancerous, classified into congenital and acquired:

Congenital:
- A. Malformations; nevi, particularly those that are pigmented.
- B. Dystrophies—xeroderma pigmentosum.

Acquired:
- A. Inflammations.
  1. Hyperkeratosis
     - a. Seborrheic keratoses
     - b. Horns.
     - c. Warts.
- B. 2. Physical Agents:
     - a. Exposure;—cancer in farmers' and sailors' skins.
     - b. Heat;—kangri cancer in India.
     - c. Actinic rays;—X-ray and sunlight.
  3. Chemical Agents—tar, arsenic, paraffin, soot, aniline.
  4. Atrophic lesions, *senile keratoses;* may occur at any time since certain skins show old age changes early.
  5. Scars—Lupus vulgaris, syphilis, burns, foreign bodies in skin, varicose ulcers.
  6. Trauma—either single or repeated trauma may ultimately produce cancer.
  7. Paget's Disease, Bowen's Disease.

The types of skin lesions which may become cancerous are multiple and varied, but practically any dermatosis may undergo malignant degeneration.

Economics

(Concluded from page 211)

must be as it has always been, the very best for the patient, yet the doctor united with his professional brothers must see that his rightful prestige must be real and not apparent, that abuses of his patient, his services and his profession must be stopped, and that full and proper remuneration must be granted to him.

New Sign of Pericardial Effusion

Of all the evidences that are conventionally employed in determining the diagnosis of pericardial effusion, ELI MOSCHCOWITZ, New York (*Journal A. M. A.,* May 27, 1933), observed that the conjunction of the following three signs is usually conclusive: (1) widening of the area of cardiac flatness, (2) abrupt transition from pulmonary resonance to cardiac flatness, and (3) widening of the cardiac dulness in the second intercostal space. Of these three signs, only the second, so far as the author can gather, has not been described before. No one of these signs, taken singly, is conclusive, but together they form a triad which is thoroughly reliable, as confirmed by roentgen examination or at necropsy.

Proceedings of the Society of Plastic and Reconstructive Surgery

New York Academy of Medicine, March 30, 1933

1. The Application of Plastic and Cosmetic Technic in General Surgical Operations. Presentation of Cases. Milton Bodenheimer, M.D.

2. Evaluation of Non-Surgical Methods in the Treatment of Cosmetic Skin Disorders. Herman Feit, M.D.

3. Bone Carpentry. Lantern Slides. Fred H. Albee, M.D.

4. The Medico-Legal Aspect in the Practice of Plastic and Reconstructive Surgery. Lorenz J. Brosman, Counsel, N. Y. State Medical Society.

DR. JACQUES W. MALINIAK, Presiding

The Application of Plastic and Cosmetic Technic in General Surgery, Milton Bodenheimer, M. D.

THE paper is a brief outline of the use and application of cosmetic and plastic surgery by the general surgeon. Allowing for participation in plastic and cosmetic surgery to varying degrees by those specializing in cosmetic and rhinoplastic surgery, by orthopedists, gynecologists, and ophthalmologists, there still remains a considerable field in routine practice of the general surgeon for application of principles of plastic surgery. For purposes of discussion there will be three main subdivisions:

(1) Routine procedures on neck
(2) Routine procedures on breasts
(3) Routine procedures on abdomen

Neck Surgery

Under routine procedures in neck region, where the surgeon is called upon to operate for a multiplicity of diseases, it is usually desirable to obtain a healed scar which will be least noticeable and unaccompanied by constriction and pressure symptoms. It is in the field of goiter that these considerations are most important. Essential feature is properly placed symmetrical incision which leaves a smooth scar even when drainage has been employed, and without pressure symptoms from contraction of scar. This is effected by collar or necklace incision through skin, subcutaneous tissue and platysma. To obtain a least noticeable scar, unaccompanied by adherence of skin or underlying tissue to deeper structures with subsequent puckering or retraction of tissues at site of incision, it is essential that hemostasis be meticulous, that various layers of tissues be properly approximated, and drains be placed so that removal in shortest possible time will not interfere with smooth healing of superficial incision. Drainage may be instituted to thyroid stumps, substernal space, and subcutaneous space, emerging either from center or angle of wound. The prethyroid muscles, cervical fascia, and subcutaneous tissue with platysma are then closed with interrupted mattress sutures to be described. The skin is closed by a special method of multiple interrupted sutures of fine black silk on straight needles, leaving all needles in position until last one is passed, then tying.

Breast Surgery

The majority of cases coming to the general surgeon can be divided into two main groups, local excision of tumors including biopsy for diagnosis, and more radical operation for malignancy. In removal of benign tumors, incisions are radial or in the mammary fold. Here, approximation of deeper breast tissue to prevent sagging is advisable. In simple mastectomies, incision must be placed so as to leave a good fatty layer and movable scar, Rodman or transverse incision best serving the purpose. In radical operation, although no consideration of cosmetic or plastic result should interfere with thoroughness of operation, skin incisions can be planned which will allow for adequate exposure, with resultant soft, supple scar having a good amount of subcutaneous fat remaining, and a skin freely moveable over ribs and intercostal muscles. Incisions also vary according to site of tumor. Incisions employed with radical operation are: (1) Halstead or Willy Meyer, (2) Jackson, (3) modification of first two by using abdominal flaps as suggested by Beer and Smith, (4) Rodman or transverse incision modified to individual requirements. Proper drainage is essential for good healing and is done by stab wound incision placed in the axilla.

Procedures on Abdomen

These can be relegated to the following four groups:

(1) Large ventral hernias and diastases.
(2) Incisional hernias and diastases including simple and multilocular incisional hernias and large inguinal hernias.
(3) Pendulous abdomen with relaxed panniculus adiposus, with or without hernia or diastasis.
(4) Post-operative defects resulting from infectious necrosis or gangrene.

In repairing these groups except the last, it is important to plan incision so that a sufficiently free and loose flap is left to cover reconstructed deeper tissues, so that a firm union of skin will result, and good cosmetic appearance given to wound. In large hernias and defects repair methods of Mayo and Blake are still in use, but have been improved by fascial graft and suture as used by Gallie.

In those cases of pendulous abdomen, encountered in obese multiparous women also in need of repair of pelvic regions, cosmetic and functional results are usually very satisfactory. The best procedure in these cases is a two-stage operation, the first consisting of plastic repair of the pelvic floor, and the second, a large lipectomy of the abdominal wall, fixation of uterus, sterilization, and repair of rectus diastases.

In postoperative defects resulting from infectious necrosis or gangrene, plastic repair may be attempted but subsequent infection and breaking down may occur, due to simple infection, or a more complicated type due to anaerobes, or through a symbiosis of bacteria. Not until formation of tissue resistance and antibodies occurs

will a successful result be obtained. Then the only solution is to use a large pedicle flap. Even after flaps have healed in position, various areas may still not heal until pinch grafts are used for smaller defects.

Summary

The application of reconstructive plastic and cosmetic procedures in general surgery is discussed in the fields of thyroid operations, mastectomies, simple and radical, in abdominal defects, either natural or artificial, or those the result of increased abdominal pressure from child bearing and drudgery. A class of defects produced by infection is also discussed. These cases are cited to demonstrate plastic methods.

Abstract of Paper—"Evaluation of Non-Surgical Methods in the Treatment of Cosmetic Skin Disorders." Hermann Feit, M.D.

AFTER giving a definition of cosmetic skin disorders, the essayist evaluates the different physical, chemical or dietary measures used for their treatment.

He holds the view that young keloids can be treated with X-ray or radium alone while the old firm keloids yield only to a combination of surgical and physical methods. The tumors of the xanthoma group do not react to radiotherapy and surgical excision is given preference. The same holds true for the treatment of lipoma, myoma, neuroma, and fibroma. As embryonic or rapidly growing tissue is the most radiosensitive one, good results can only be obtained in tumors which are made up of such tissue, for instance, angiomata, while tumors consisting of fully developed blood vessels, like port wine marks, are extremely radioresistant. The writer, still of the opinion that the use of radium should be reserved for the treatment of malignant tumors, also holds the view that the remarkable results obtained by radium in the treatment of widely spread angiomata is one of the finest achievements in dermatological practice.

The injection method of treatment by the use of sclerosing solutions such as are employed in the treatment of varicose veins is effective in properly selected cases. Lymphangiomata and pigmented nevi are not amenable to X-ray or radium. The epilation of superfluous hair by X-rays is condemnable and should be replaced by electrolysis because the amount of X-ray which is necessary to remove the hair permanently is beyond the safety line. For the treatment of hyperiodrosis, on the other hand, X-ray is the remedy of choice, but care should be taken to avoid excessive dryness of the hands. While the common and plantar warts yield as a rule very well to X-ray radiation, the juvenile wart reacts favorably to arsenic or mercury given by mouth or intramuscularly. The flat wart seen in the bearded region is best treated by fine desiccation. The senile keratoses should be first curetted before X-ray or radium is applied. In the treatment of "X-ray skin" salt-free and vitamin A rich diet seem to make the skin softer. The use of pancreatin, which has accomplished remarkable results in the treatment of scleroderma, might also be of value in the treatment of "X-ray skin" salt-free and vitamin A-rich diet seem to in the hands of the essayist, of great value in the treatment of pustular rosacea. In the treatment of sycosis vulgaris, painting with brilliant green seems to be of great value in early cases of this disease. In cases where X-ray fails to procure a cure, epilation with electrolysis, provided the area is not too large, has proven very successful. Raynaud's disease reacts favorably to pancreatin by increasing the peripheral circulation, and sometimes to intravenous injections with sodium thiosulphate, if there is retention of heavy metals. The treatment of lupus erythematosus with the different gold salts is a great step forward in comparison with the older methods which left considerable scarring of the face. The treatment of true tuberculosis of the skin with salt-free and vitamin-rich diet marks one of the greatest achievements in dermatology within the last decade.

Abstract of Paper—"Bone Carpentry" Fred H. Albee, M.D.

The relative advantages of autogenous and heterogenous grafts are described.

The undesirability of boiled or dead bone is emphasized and illustrated by X-rays demonstrating failure from the use of these materials.

Instances of the accuracy of coaptation of bony parts in bone carpentry are emphasized on the following points:

1. Accuracy of fit in the case of mechanical immobilization.
2. Accuracy of coaptation necessary for early and profuse development of blood supply.
3. Accuracy of fit places the least burden upon the osteogenetic capabilities of bony elements involved in operation. This applies to both the graft and host tissues.

Many illustrative drawings and X-rays are included demonstrating reconstruction operations widely distributed throughout the osseous system. Cases are selected to illustrate the similarity in the demands upon the reconstruction surgeon, whether he be working on the jaw, spine, hip, knee, etc.

Abstract of Mr. Lorenz J. Brosnan's Paper

FROM my thirteen years of experience in medico-legal work, during three of which I have been General Counsel for the Medical Society of the State of New York, I can state that the risk and hazard of a possible malpractice action attaches to every branch of medicine or surgery.

In my experience I have had occasion to deal with certain cases involving the specialty of plastic and reconstructive surgery. The cases which have come to my knowledge have included among others the following: A suit claiming malpractice in the performance of an operation for the elimination of redundant skin on the face and eyelids of a patient, including an attempt to remove certain scars from the patient's face left from an earlier operation; a case arising out of the removal of old burn scars from the face of a young girl; a case of transplantation of cartilage to correct a deformity of the nose; a case involving an attempt to improve a condition of facial paralysis; and cases involving plastic surgery for the purpose of correcting pendulous breasts.

In answer to the question as to whether there are any special legal provisions governing the liability of a plastic surgeon in a malpractice action, the answer to the question is in the negative. It must be remembered, however, that the law requires a man who specializes in a particular field, such as the field of plastic surgery, to possess such knowledge and skill as is possessed by the average physician and surgeon specializing in his particular field. The legal obligation of a physician to his patient may be briefly summarized as follows: The physician or surgeon is under the duty of possessing such reasonable learning and skill as is ordinarily possessed by physicians and surgeons in his locality, and it is his duty to use reasonable skill and diligence in his treatment of the patient; the doctor is under the further obligation to use his best judgment; he is,

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Medicine

Treatment of Peptic Ulcer

A. Winkelstein *(American Journal of Medical Sciences 185:695, May, 1933)* reports a new treatment for peptic ulcer, the aim of which is to neutralize completely the free hydrochloric acid of the gastric contents throughout the twenty-four hours of the day. The author's studies have shown that there is a high nocturnal curve of gastric acidity in ulcer patients. In the method of treatment described, a Rehfuss tube is passed into the stomach and connected with rubber tubing to gravity flask, with a Murphy drip indicator. With this apparatus, milk containing 5 gm. bicarbonate of soda to the quart is allowed to drip into the stomach at the rate of 30 drops a minute, giving 3 quarts of milk and 15 gm. bicarbonate of soda a day. After forty-eight hours of this treatment the alkalinity (carbon dioxide combining power of the blood) is determined; if this approaches 80 volumes per cent, or if there are any symptoms of alkalosis, the amount of alkali used is decreased. Sedatives are used, local heat applied to the abdomen, and atropine given. Usually patients tolerate the tube well, and the treatment is continued for two to three weeks. Then the tube is removed during the day, and the usual ulcer treatment given; then the drip is used at night (from 8 P.M. to 8 A.M.). At the end of four weeks, a night fractional meal test is made, and a radiological examination; and treatment is continued according to indications. Some patients prefer to continue the drip at night after discharge from the hospital. In all the 42 cases—18 duodenal, 19 gastric and 5 jejunal ulcers—symptoms have been entirely relieved, and there has been recurrence in only one case, which was relieved by a new drip treatment. In 3 cases of duodenal ulcer, the bulge deformity disappeared after three weeks of treatment; in 11 cases of gastric ulcer, the ulcer niche disappeared completely, and in 5 cases greatly diminished in size.

A. R. Hufford *(Minnesota Medicine, 16:310, May, 1933)* reports the use of an ulcer vaccine in the treatment of gastric and duodenal ulcer. The vaccine is prepared from cultures of a green-producing diplostreptococcus, which the author has isolated from foci of infection in ulcer patients and from the ulcer when resection was done. Subcutaneous injections were given twice weekly in doses increasing from 0.1 to 1 c.c. in addition to the regular ulcer diet and medical treatment. In addition evident foci of infection were removed in a considerable percentage of cases. In 71 cases in which foci of infection were removed and the vaccine given, only 2 had a recurrence of symptoms (2.8 per cent). In cases where the vaccine was given, but foci of infection were not removed, 17.8 per cent. showed recurrence. In patients who had evident foci of infection removed, but were not given vaccine, there was recurrence in 44.4 per cent. But in a small group of patients who neither had foci removed nor received vaccine, there were 81 per cent. recurrences.

Insulin and Glucose in the Treatment of Heart Disease

K. S. Smith *(British Medical Journal, 1:693, April 22, 1933)* reviews the development of glucose-insulin therapy in heart disease. This treatment has been used in congestive failure with good results, but appears to be of greater benefit in arterial and especially in coronary syndromes, and thus in angina pectoris due to coronary disease. The author has used glucose and insulin in the treatment of cases of angina pectoris definitely due to coronary disease, in which attacks had occurred frequently for at least one to two months. In all these cases the patients continued taking any remedies that they had been taking and followed the same regime of work or rest as before. The insulin was given in doses of 5 units before the morning and before the evening meal and was followed by 30 gm. glucose with the meal. This treatment was continued for varying periods up to seventeen weeks. In all cases the number and severity of the attacks were greatly reduced, and often the attacks ceased entirely. Improvement was maintained after discontinuing the insulin and glucose. Six illustrative cases are reported. On the basis of his own clinical studies and clinical and experimental findings reported by others, the author concludes that anginal pains are related to faulty carbohydrate metabolism in the heart; and that insulin acts immediately by its stimulating effect on glycogen metabolism of the heart and progressively by promoting the combustion of fat, which leads to resolution of early atheromatous changes in the coronary arteries.

G. Carrière and his associates at Lille *(Gazette des hôpitaux, 106:535; 573, April 12 and 19, 1933)* also report the use of glucose and insulin in the treatment of cardiac disease. Their 47 cases reported include 34 cases of various types of cardiac failure and 13 cases of exophthalmic goiter with severe cardiac symptoms. The patients were kept at rest in bed on a milk or milk and vegetable diet for ten days. In this period glucose was given, intravenously as a rule, in doses of 60 gm. daily. The amount of insulin given depended upon the blood sugar. The dose varied from 5 to 15 units daily and was calculated to maintain the blood sugar within normal limits; if hypoglycemia persisted not more than 5 units daily were given. This treatment regulated and moderated the cardiac rhythm and induced diuresis. It was effective in cases with irreducible asystolia, and with ventricular insufficiency and a tendency to edema, but not in cardiac symptoms associated with infectious diseases. It was most effective in controlling the cardiac symptoms of exophthalmic goiter, and the authors believe that glucose and insulin should be combined with iodin for the pre-operative treatment of patients with exophthalmic goiter who show symptoms of cardiac failure.

The Heart in Myxedema

J. Lerman, R. J. Clark and J. H. Means *(Annals of Internal Medicine, 6:1251, April, 1933)* report a study of the heart in 30 cases of myxedema at the Massachusetts General Hospital, before and after treatment with thyroid extract. Roentgen-ray and electrocardiographic examinations were made in each case, as well as clinical studies, including blood pressure determinations. The cases reported included only definite myxedema, not postoperative. It was found that: The heart is generally enlarged in myxedema, and that after thyroid medication, the size of the heart is progressively reduced for three to six months. This reduction is proportionate to the degree of enlargement prior to treatment. The blood pressure in myxedema is frequently above normal. Both systolic and diastolic pressures tend to fall under thyroid treatment, the diastolic pressure particularly, with a slight increase in pulse pressure. The most marked reduction in blood pressure occurs in patients with definite hypertension. The electrocardiogram in myxedema is always abnormal. The most common abnormality is a flattening or inversion of the T waves, especially in lead II; abnormal axis deviation and small P and Q-R-S complexes are common. With thyroid treatment these abnormalities tend to disappear entirely or partially. They disappear most completely in those patients who show the most marked reduction in the size of the heart. The authors conclude that "myxedema heart" in the sense of cardiac enlargement that is reduced by thyroid treatment, is common; but in the sense of cardiac enlargement with congestive failure, is rare. Myxedema patients with evidence of cardiac failure usually have hypertension and arteriosclerosis. The cardiac enlargement and electrocardiographic changes are to be regarded as a part of the picture of myxedema and not a separate cardiac entity.

A Biological Test for Hodgkin's Disease

C. E. van Rooyen *(British Medical Journal, 1:644, April 15, 1932)* notes that in animal experiments, M. H. Gordon has shown that intracerebral inoculation of rabbits and guinea pigs with suspensions of lymphadenomatous tissue is followed by spastic paralysis of the hind limbs, rigidity, ataxia and muscular weakness. Similar suspensions of normal lymphoid tissue, leukemic, sarcomatous, and carcinomatous lymphoid tissue did not produce such symptoms. Such animal inoculations may be used for the identification of true lymphadenomatous tissue in doubtful clinical cases. The author reports 5 cases of Hodgkin's disease, one of pseudoleukemia and one of lymphosarcoma. Suspensions of diseased glands removed at biopsy were injected intracerebrally into rabbits. With material from 3 of the 5 cases of Hodgkin's disease, typical symptoms as described by Gordon were produced, in one doubtful symptoms, and in one no symptoms. In the other 2 cases the results were entirely negative. This test, therefore, is of definite value as an aid to the diagnosis of Hodgkin's disease.

Red Cell Sedimentation in Arthritis

T. W. Oppel and his associates at the Thorndike Laboratory of the Harvard Medical School *(Journal of Clinical Investigation, 12:291, March, 1933)* report a study of the sedimentation rate of the bed blood cells in different types of arthritis. There were 107 patients with arthritis of various types including acute rheumatic fever, 41 patients with febrile diseases, 53 with non-febrile diseases, and 13 normal persons. The most rapid sedimentation rates were found in acute rheumatic fever, rheumatoid and gonococcal arthritis, and in the febrile diseases. Patients with rheumatoid arthritis showed a more rapid sedimentation rate than those with degenerative arthritis as a rule, but there were exceptions, so that, as an isolated observation, the test was of little value in differentiating between the two. Unless complications are present that would modify the sedimentation rate, the variations in the rate are of value in following the course of acute rheumatic fever and rheumatoid arthritis.

Surgery

Postoperative Pulmonary Complications

C. Jackson and C. L. Jackson *(Annals of Surgery, 97:516, April, 1933)* distinguish five distinct types of postoperative pulmonary complications: Postoperative atelectasis, following abdominal operations chiefly; pulmonary suppuration ("post-tonsillectomic abscess") following tonsillectomy and other operations on the upper air passages; foreign bodies inspirated during operations on the upper air passages; infarct that may follow operation on any region; pneumonitis, usually called postoperative pneumonia. In this article only the first three types are discussed, with special reference to the bronchoscopic findings and the value of bronchoscopic treatment. In their study of postoperative complications of these types at their Bronchoscopic Clinic, the authors have found that postoperative atelectasis is not primarily a suppurative condition; the suppuration that follows later is endobronchial; the obstructive bronchial secretions causing the atelectasis contain fibrin, few pus cells, no gross pus, and few, if any, pyogenic bacteria. Postoperative foreign body also does not produce a primarily purulent lesion; the onset of suppuration is gradual and the pus formation is entirely endobronchial, in spite of the fact that such foreign bodies must carry blood and infective material into the bronchi. Pulmonary complications following operations on the tonsils and upper air passages are suppurative from the onset; there is expectoration of pus and blood from the start; the suppuration is usually a parenchymal abscess emptying into a bronchus. This is in marked contrast to the non-suppurative onset of the other two types of postoperative pulmonary lesions. In all these types bronchoscopy is indicated in treatment at the earliest possible moment. In postoperative atelectasis, the obstructive secretions are removed, and the patient shows immediate improvement after bronchoscopical aspiration. In postoperative abscess, the cilia are "overwhelmed" by the large quantities of pus entering the bronchi from the abscess; bronchoscopical aspiration relieves the cilia of this "load" of pus and restores the defensive powers of the lung by establishing ventilation and drainage. In abscess, the bronchoscopical aspiration is supplemented by the "tussive squeeze," i.e., the compression of the lung during cough which squeezes the pus out of the parenchyma and smallest bronchi, so that it is not always necessary to insert the tube into the abscess cavity.

Respiratory Exchange and Blood Sugar in Apparently Non-Diabetic Patients With Non-Healing Wounds

I. M. Rabinowitch *(Archives of Surgery, 26:696, April, 1933)* reports a study of the respiratory exchange and blood sugar curves after the administration of 100 gm. dextrose, in surgical patients whose wounds did not heal. None of these patients had glycosuria or any other symptoms of diabetes except the slow healing of the wound. Some showed a fasting blood sugar slightly above normal, others a normal fasting value, but the blood sugar curves after the ingestion of dextrose indicated disturbed carbohydrate metabolism in every case. Determination of the respiratory exchange simultaneously with the blood sugar determination after the ingestion of dextrose showed a definite decrease in the rate of oxidation of carbohydrates. In these cases under diet and insulin therapy the wounds healed promptly. The usual insulin dosage was 5 units every six hours, but some of these patients, although apparently not diabetic and showing no marked hyperglycemia could tolerate larger doses, up to 15 units, every six to eight hours. In these cases the usual conditions that might explain impaired healing of tissue were excluded; infection was present in some cases; but in others there was no evidence of infection.

Blood Supply of the Large Intestine; its Surgical Considerations

J. A. Steward and F. W. Rankin of the Mayo Clinic *(Archives of Surgery, 26:843, May, 1933)* present a study of the blood supply of the large intestine with special reference to its surgical significance. This study shows a wide variation in the "arterial patterns." The colon and its blood vessels the authors describe briefly as "roughly similar to a rubber-tired wheel with few irregularly placed spokes. The spokes represent the named colic arteries, and the rim represents the marginal artery from which the colon is supplied by the terminal branches." The arteries of the colon are variable in size and in position, and must be carefully identified by the surgeon in each operation; they should be ligated only when occasion demands. Mobilization of the colon so that it can be lifted till the mesocolon is vertical to the posterior wall makes it possible to identify the blood vessels. In the wall of the colon, there is comparatively little anastomosis between the small terminal arteries; this necessitates greater care in handling the large intestine than the small intestine. The marginal artery should always be left intact when a colostomy is done. Where resection is to be done, the operation is simplified by ligating the vessels to the segment to be removed in their central position, before removal of the bowel is attempted. In the rectosigmoid and rectum the character of the blood supply changes; there is no marginal artery, and the small arteries follow a more longitudinal direction along the bowel. The superior hemorrhoidal artery is the chief source of blood supply to this region, and if it is severed, the bowel below that point should be removed at once. The fact that the middle hemorrhoidal artery often serves as a vesical artery accounts for some of the bladder complications developing after posterior resections of the rectum.

X-ray Diagnosis of Ileus

A. Ochsner *(Surgery, Gynecology and Obstetrics, 56:719, April, 1933)* notes that early diagnosis in acute intestinal obstruction is of the utmost importance; and that the X-ray is of definite aid in establishing such a diagnosis. The roentgen examination in cases where the ileus is suspected must, of course, be made without a contrast medium, but its value lies in the fact that it demonstrates accumulated gas or gas and fluid in the intestines proximal to the point of obstruction. In order to determine the time at which such X-ray evidence of ileus becomes positive, the author carried out experiments on dogs, in which simple and strangulated obstructions were produced at various points in the intestines. It was found that the accumulation of gas proximal to the point of obstruction was the earliest roentgenographic evidence of obstruction; gas accumulation occurred earlier and was more marked than fluid accumulation. In simple obstructions of the jejunum, gas accumulation could be demonstrated roentgenographically three hours after the production of the obstruction, and in stangulated obstruction, one hour later. In both simple and strangulated obstructions of the ileum, gas accumulation could be demonstrated as early as one hour after obstruction; the accumulation of gas and fluid was more marked in strangulated obstruction. The accumulations of gas and fluid were greater the lower the site of the obstruction; and greater in strangulated than in simple obstructions. All these findings indicate the great value of plain roentgenograms for early diagnosis of ileus.

Preoperative Treatment With Hydrochloric Acid in Gastric Carcinoma

R. Friedrich *(Zentralblatt für Chirurgie, 60:801, April 8, 1933)* notes that the operative mortality of gastric resection for gastric carcinoma is still relatively high, in spite of many improvements in technique, and also that it is much higher than that of gastric resection for ulcer. Normally the stomach contents are sterile, and this is also true in gastric ulcer, in which a high gastric acidity is the rule. But in gastric carcinoma anacidity is the rule, and the gastric contents are usually infected, increasing the danger of postoperative peritoneal infection in these cases. Recently at Denk's surgical clinic at Vienna, patients with gastric carcinoma and anacidity have been given hydrochloric acid in a ½ per cent. solution in fruit juice for six to eight days before operation; and on the day before operation gastric lavage was done with a ¼ per cent. solution. In 10 of 14 cases in which this method was used, the gastric contents were entirely sterile; in the 4 others only the non-pathogenic organisms of the small intestine were found; there was no incidence of postoperative peritoneal infection. While in 9 cases not treated preoperatively, there was only one case with absolutely sterile gastric contents, and 5 in which organisms of the coli group were found; and infection of the peritoneum occurred in two thirds.

A Muscle Pedicle Repair of Defects in the Parietal Pleura

J. B. Stenbuck *(Surgery, Gynecology and Obstetrics, 56:705, March, 1933)* describes a method of repair of the parietal pleura in penetrating wounds of the chest. Such penetrating wounds, especially stab wounds, may make irregular defects in the chest wall by fracturing the lower thinner border of the rib, leaving a rough edge devoid of intercostal muscle; or a small section of rib or cartilage may have to be resected to reach and ligate a bleeding vessel, also making an irregular defect. Such a defect prevents air tight closure even if the ribs are brought tightly together. For the closure of the pleural defect the author has recently used a muscle pedicle the free end of which is placed into the pleural cavity. The pectoralis major or the latissimus dorsi muscle is usually employed. The thickness of the muscle flap is made slightly larger than the pleural defect, so that it fits snugly into it; the length is made sufficient to allow the flap to drop into the pleural cavity for approximately one inch; as there is a tendency to contraction of the muscle flap, it is made about one and one-half times the length apparently necessary. The flap is cut so that the base of the pedicle is near the pleural defect and the point of severance distal to it. It is held in place with a few interrupted sutures or a continuous suture attached to adjacent muscle or periosteum. Such a flap fits snugly, without tension, and forms "a perfect stopper." While this operation has been used so far only for penetrating wounds, the author considers that it would be equally useful following resections involving the parietal pleura.

Urology

Analgesic Effects of Roentgen Rays in Metastases From Carcinoma of the Prostate Gland

E. T. Leddy and C. Gianturco *(American Journal of Roentgenology, 29:667, May, 1933)* note that in carcinoma of the prostate gland the nerves of the sacral and lumbar plexus are so near the primary tumor and the metastatic lymph nodes that compression and irritation of these nerves may easily occur and cause pain. Metastases to the bones, especially those of the pelvis, lower spine, and upper femur may also cause pain. Forty cases of inoperable carcinoma of the prostate with severe pain in the back or along the sciatic nerves were treated at the Mayo Clinic with the Roentgen rays. The treatment was given slowly to avoid severe reactions, one field daily being well tolerated as a rule. The technique varied somewhat, but usually included cross firing of the pelvis through four large fields at high voltage (200 kv.) and cross firing of the spine through large fields on each side of it with moderate voltage. In 3 cases pain was completely relieved; in 21 cases it was markedly, but not entirely relieved; and in 16 cases there was no relief. The authors conclude that a beneficial effect from Roetgen-ray treatment may be expected in about half of the cases of pain from metastasis in carcinoma of the prostate. It is a well tolerated method in some cases where increasing dosage of sedatives or radical operations on the nerves would otherwise be required.

COMMENT

The status of X-ray in the treatment of internal cancer is twofold and neither is fully nor correctly measured. First, when a cancer has mass, infiltration, extension, ulceration, hemorrhage and mixed or pure infection X-ray irradiation is not of much value. To demand cure of such cancers by X-ray is absurd. All that can be expected of it is exactly what these observers record—a certain amount of tissue contraction leading to decreased pressure pain and control of early metastases and hemorrhage. Second, X-ray reaches its best results in tending to limit metastases. Therefore it is practically certain that X-ray before operation and as soon as possible after early operation for removal of the cancer will be shown with time to be of the greatest value. Of great importance is the fact that these observers are returning to the form of X-ray I never forsook—slow, gentle treatments without reactions, and fractional instead of mass doses.

V. C. P.

Ammonia and Sulphur of the Blood in Uremia of Urinary Obstruction

C. G. Bandler and J. A. Killian *(Journal of Urology, 29: 337, March, 1933)* state that an experience of eighteen years interpreting chemical blood analyses in cases of nephritis and obstructive lesions of the urinary tract has led them to the conclusion that the retention of nonprotein nitrogen in the blood "represents but a small phase of the influence of renal impairment upon the body's metabolism." In the investigations reported, chemical changes in the blood in the uncomplicated, experimental obstruction of the urinary tract were studied and compared with the changes found in human subjects with similar lesions. The relationships between the retention of nonprotein nitrogen, urea, ammonia and the sulphur compounds were especially studied. In experiments on rabbits it was found that urinary obstruction resulted in a marked rise in the nonprotein sulphur of the blood, both its oxidized and neutral fractions. This was most marked in the early stages, decreasing in the later stages in proportion to nitrogen retention. In human subjects with urinary obstruction, the rise of nonprotein sulphur was less marked than in the experimental animals; it was largely due to the rise in sulphate sulphur. It was not proportional to the degree of nitrogen retention. The accumulation of sulphates in the blood in the experimental animals is significant in the acid-base equilibrium, but in humans it is not sufficiently marked to be of such significance except perhaps in the terminal stages. Complete or partial urinary obstruction has no effect on the ammonia of the blood in experimental animals or man; in the extremes of acidosis of renal impairment, ammonia was not found to be available as potential base in the blood.

COMMENT

This prolonged and exhaustive study has merit indeed, but one cannot escape the reservation that in finality it will not last because it is too narrow. It seems to belong to the days when, for example, creatinine alone was regarded as the crux of all blood chemistry diagnosis. Noteworthy is the contrast between the results of urinary obstruction in animals and man in the relation between protein sulphur and nonprotein nitrogen.

V. C. P.

The Vas Deferens

A. L. Wolbarst *(Journal of Urology, 29:405, April, 1933)* notes that the significance of the vas deferens as a clinical entity is not generally recognized; it is usually regarded merely as a connecting link between the seminal vesicles and the epididymis. Yet there is clinical evidence to show that the vas deferens may be the site of primary tumors and congenital abnormalities; it may escape infection when the epididymis or vesicle or both are infected; or it may be infected when either or both of these organs are free from infection. In the series of cases reported, the author presents evidence also to show that sterility may be due to stenosis of the vas without pathological changes at either end; and that it may be a nidus for pathological organisms hitherto not found in the vas. In 124 vasotomies done in the past five years, there were 27 cases in which treatment was sought for sterility, and in which there was no history of gonorrhoea. Examination of the semen showed complete absence of sperm; there was no evidence of pathological changes in either the epididymes or the seminal vesicles, but on exploratory vasotomy, bilateral stenosis of the vas was found in every case, and thus established as the cause of the sterility. In the 124 cases pus was found in the lumen of the vas in 7 cases; cultures were positive for pyogenic organisms in 4 of these cases, including diphtheroids in 2 cases. No other cases have been found in literature in which bacterial organisms other than the tubercle bacilli have been found in the vas. The author is of the opinion that systemic infections may be a frequent unrecognized factor in the production of a focal infection in the vas which results in stenosis and sterility.

COMMENT

Probably the simplest concept of the semen-producing, transferring and storing anatomy is to regard the testicle as the producer, the epididymis as the primary storage pocket and the ampulla of the vas and its seminal vesicle as the final storage pockets and the vas as the path of transfer. On this basis it is practically impossible for the vas to escape infection in involvements of either storage pouches. What probably happens is that in some cases the lining of the vas is most complex and, therefore, incidentally retains the infection after its epididymis, ampulla and vesicle have seemingly recovered. A very careful and repeated multiple glass test will usually settle this question. The meaning of systemic infection as the source of unsuspected local infection is only beginning to be comprehended. Nevertheless, as a rule, such local infections are usually in organs rather than mere passages, out of function except when the product of an organ is passing: in these cases semen from the testicle. V. C. P.

Pyelography in Injuries of the Kidney

H. C. Rolnick *(American Journal of Surgery, 20:40, April, 1933)* notes that radiography is of little value in the immediate diagnosis of injury to the kidney; and the condition of the patient is such that the use of retrograde or even intravenous pyelography is often contra-indicated. But when the hematuria and the other acute symptoms have subsided, radiography is of value to show various degrees of damage to the parenchyma, calices, and pelvis. The perirenal hematoma usually associated with the injury will result in some degree of fibrosis around the kidney; marked chronic perinephritis may result from secondary infection. "Pulpification" and destruction of part of the kidney results in fibrosis of these parts or of the entire kidney; varying degrees of hydronephrosis may result from injury to the calices, pelvis and ureter; and infection may cause a complicating pyelonephritis. These various pathological changes are shown by pyelography; often the pyelogram is "clear and illuminating." In 10 cases of renal damage after injury studied by this method, intravenous pyelography was used in only one case, but the author is of the opinion that intravenous pyelography may replace retrograde pyelography for the diagnosis of the extent of renal damage, thus avoiding any danger of infection.

Rodiographic Diagnosis of Malignancy of Bladder Tumors

A. Astraldi and E. Lanari of Buenos Aires *(Urologic and Cutaneous Review, 37:222, April, 1933)* describe their method of determining the malignancy of bladder tumors by demonstrating the degree of infiltration radiographically. For this they use a combination of an opaque medium—umbrator—and injection of air. Their procedure is as follows:

"The bladder is distended with umbrator, 100 or 150 c.c., the space of Retzius is punctured, the umbrator is withdrawn through the same catheter by which it was introduced, the Retzius space is distended with 500 to 600 c.c. of air, the needle is withdrawn from the Retzius space and through the same vesical catheter the bladder is distended with air. Radiograms can be obtained in the antero-posterior or oblique position. The air is absorbed and there is nothing to fear."

The radiograms made with this method show both the tumor and the degree of infiltration of the fall clearly. The method is "simple, harmless, painless, and ambulatory."

COMMENT

It is about fifteen years since the insufflation of air into the perirenal space was advocated as an aid in X-ray diagnosis of kidney pathology. The successful cases were diagrammatic in diagnosis but the incidental spread of infection and the accident of embolism soon challenged and then discarded the whole method. These observations by Astraldi and Lanari are very suggestive but the questions remain for experience and time to answer as to the safety of the method in a thousand cases and in every operator's hands.

V. C. P.

Endocrine Influence in the Production of Prostatic Hypertrophy

W. E. Lower *(American Journal of Surgery, 20:230, May, 1933)* reports experimental and clinical studies of the endocrine relationship between the prostate and other glands of internal secretion, especially the testes and the hypophysis. In animal experiments it was found that anterior pituitary hormone produces hyperplasia of the prostate; and that the male sex hormone which is excreted in the urine also produces hyperplasia of the prostate. In animals that were castrated the male sex hormone prevented atrophy of the prostate. The male sex hormone found in the urine—androtin—is produced by the interstitial cells of the gonads and is comparable physiologically to theelin—the female sex hormone—formed by the ovaries. The results of the experiments indicate that the administration of anterior pituitary hormone stimulates the production of the male sex hormone by the interstitial cells which results in prostatic hypertrophy. In castrated animals, it has been shown that the prostate and the seminal vesicles atrophy, and the pituitary increases in size. Administration of the male sex hormone produces regeneration of the prostate and seminal vesicles but does not alter the hyperplastic state of the pituitary. Experimental evidence indicates that the germinal epithelium of the testicles secretes a hormone which inhibits the hyperfunction of the pituitary gland. If this theory is correct, it has a clinical application. In men senescence produces degenerative changes in the germinal epithelium; this results in diminution of the secretion; and thus in hyperplasia of the pituitary which stimulates the interstitial cells of the gonads to production of the male sex hormone to excess, resulting in hypertrophy of the prostate. Thus theoretically, hypertrophy of the prostate can be prevented by inhibiting the influence of the anterior pituitary or by inhibiting that of the gonads. So far the former cannot be accomplished clinically, but the latter is possible. Clinically as well as experimentally it has been found that castration renders the prostate atrophic. In cases where castration is not indicated by definite pathological conditions, atrophy of the testicles may be induced by depriving the testicle of its main blood supply. This can be done by dividing only the internal spermatic and the deferential arteries without danger of sloughing. In a limited number of clinical cases in which this procedure has been tried, a marked diminution in the size of the prostate was noted.

COMMENT

Endocrinology has discovered many wonders of physiology and pathology but in therapeutics the endocrine preparations are so disappointing that not a few have come to regard the whole matter as "so much literature." Such an opinion rejecting them is as unreasoning as that claiming them to be "cure-alls." Observations such as those of Lower are all in the line of slow constructive progress. Certainly if cases of prostatism can be seen early for this treatment later major surgery will be avoided. Looking backward, most urologists can easily recall cases probably suitable for this preventive measure.

V. C. P.

Pediatrics

Effect of Milk and Modified Milk on Gastric Contractions

F. W. Schlutz and D. Fetter *(American Journal of Diseases of Children, 45:480, March, 1933)* report a study of the effect of cow's milk and various modified milks on gastric contractions in children. These children were all hospitalized for more than six months before the tests were made, and were all accustomed to the procedure used, which caused no unusual physical or emotional reactions. The gastric contractions were recorded by the balloon method perfected by Carlson. It was found high gastric motility with vigorous contraction followed the Ewald test meal. Low motility, practically an atonic stomach, was observed in all tests after the feeding of unmodified cow's milk. The motility was also low following a meal of milk to which junket was added; in a few of the tests the motility was slightly increased over that with milk alone, but in the majority there was no increase. With milks that had been condensed by evaporation of some or all of the water, the gastric motility was increased over that with unmodified milk, the degree of increase varying with different products. With acidified milks—lactic acid milk, protein milk, and buttermilk—high gastric acidity was observed in over 50 per cent. of tests, considerably greater motility than with any of the other products tested. It is known that in both the processed and the acid milk the size of the curd is reduced. Measurements of gastric acidity in these studies showed a lower total gastric acidity with untreated whole milk than with any milk modification. The authors conclude that while their findings cannot be regarded as conclusive, unless supported by studies of a larger number of cases and for longer periods of time, they indicate that gastric motility after the ingestion of cow's milk is very low but that it is improved by certain modifications, especially by its acidification.

Enterospasm Secondary to Upper Respiratory Infection in Childhood

S. E. Pasette *(Archives of Pediatrics, 50:279, April, 1933)* notes that he has recently seen several cases in children in which acute, and often severe, abdominal pain was the initial

(Concluded on page 222)

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The Commercially Illiterate Doctor

Dr. Joseph C. Myer, until recently president of the Commercial Education Association, ascribes many professional failures to the inability of the doctors concerned to handle accounts. He also sees special significance in the fact that the "sucker lists" of brokerage concerns show a preponderance of professional men because they lack adequate knowledge of business procedures.

Dr. Myer thinks that it is the educators who are culpable in that they have deliberately opposed the acquisition of knowledge that would have better equipped their students for the business of life. But he also thinks this attitude is breaking down, with the result that students who go into business will not be retarded until their employers "teach them something worth while," while those who go into the professions will be safeguarded against failure. Toward the realization of such ends arts and science faculties must do more in the matter of commercial courses.

The term commercial still connotes something wicked, but the purity and innocence of some doctors in the market places of the world also begin to smell a little rank. However, Dr. Myer is not asking us to become commercialists, but to be less dumb about commercial matters that actually concern us directly and indirectly.

Abortion Results in Russia

Authoritative reports coming from Russian gynecologists (Verkhratskiy and Anufrieff) present legalized abortion in an appalling light. A heavy percentage of adnexal complications follows artificial abortions. There is a greater mortality than in normal labor, contrary to what is now being alleged by certain American propagandists. Old postabortive infections are especially likely to be lit up by the new infections. General sepsis is reported to be four times as frequent after repeated abortions as after one abortion, while adnexal inflammations are reported twice as frequent. Artificial abortion has increased more or less the following conditions: gonorrhea, uterine atrophy, uterine hyperplasia, extrauterine pregnancy, still-births, psychic disturbances, depressions, hysteria, frigidity, dyspareunia, marital discord, chronic pelvic inflammations and invalidism. More specifically, the Russian gynecologists report a twenty per cent increase of parametritis and adnexitis; a thirty-six per cent increase of necessary operations; a five per cent increase of secondary sterility; a quadrupling of postpartum fever; and a five to six times increase of postpartum hemorrhage. These authorities consider the abortariums a menace to public health and do not find that criminal abortion is languishing.

It "stands to reason" that such results are inevitably bound to follow abortion, no matter how skilful the abortionists—and goodness knows the abortarium experts are superlatively deft with the curette, for all the cervical tears and ectropions that follow in their wake.

What a fate for the sex—abortions without end, with constantly increasing danger, as shown by the foregoing data. Still, considering how contraception has flopped, it is a logical program for the hard-boiled gentlemen and big boys bearing curettes who arrange the biologic and sociologic programs for unfortunate members of the other sex.

Vasectomy for themselves? Oh no, not while there are any women around to be aborted.

On this point the ladies themselves seem, as yet, inarticulate. Perhaps the future holds a surprise for our forthright abortionists.

Something of a Fool?

Nascher suggests that inasmuch as no two physicians seem to have the same understanding as to the meaning of the term "socialized medicine," a new definition may perhaps be in order. Not all of those opposed to "government control" would go so far as to object to registration, reregistration, requirements for practice, and compulsory vaccination, yet most of these opponents will talk loosely about government or political control as more or less synonymous with socialized medicine. We seem to need a restatement as to what our economic problems (another loose term) really are.

Nascher also points out that the public has become so accustomed to free treatment in the hospitals and dispensaries that it looks upon such treatment as it does upon education, as a government function to which it is entitled. This is, in reality, says Nascher, a form of socialized medicine; medical care at government expense. "If physicians could be made to look at the problem in that light and refuse to treat cases in hos-

pitals and dispensaries unless they are paid it would eliminate from the pauper class many who could pay the private physician."

But *laissez faire,* sheer indolence even in the face of economic and social menace, and a stupid clinging to precedent, leave doctors and definitions hanging in the air as mere academic abstractions, possessing no great importance until such time as rude extraprofessional forces seize our dreamers by the scruff of their necks.

Tradition ascribes to the lawyer a profound devotion to precedent, including, however, a preliminary fee. But it seems to us that the clinic physician in his dumb adherence, professional generation after professional generation, to an institution that in many cases is ruining him, easily takes the palm as a slave to precedent. True to precedent he still gives his services in the often vain hope that he will receive an "honorarium" or reward in the shape of cash. This type of doctor continues to man the clinics under idiotic economic conditions, with no attempt at the rationalization of them. He will continue to attend to his deadly routine duties though the heavens fall and though he starve, ministering to people who could be treated elsewhere in self-respecting fashion, suitable to the times and the economic status, and paid nothing for his services to the indigent by the community; when we say self-respecting, we are thinking of the physician as well as the clinic patients. It is more than suspected that the lay directors of New York's close-to-a-thousand clinics think of him as something of a fool, while assiduously praising his "loyalty" and "altruism."

The clinic wing of the profession had gone off the "gold standard" of medicine even before the depression. The slump now is not unlike that into which the senile inmates of the almshouse frequently fall and out of which it is *almost* impossible to rouse them.

Precedent, forsooth! The clinic doctor takes precedence over any lawyer, whose attitude, after all, has some force in logic, and certainly does not make for his ruin.

Unequal Distribution of Physicians

Ordinarily one physician is required to 1500 population. In many small towns there is one physician to each 3000 population but in Manhattan conditions are somewhat different, since there is one physician to each 387 population and the number of doctors is increasing while the population of Manhattan is decreasing. Brooklyn has one physician to 700; Bronx, one to 900; Queens, one to 1200 and Richmond county, one to 1300. New York City with a population of 7,000,000 has 12,176 doctors, while the rest of the state with nearly 6,000,000 has 7055 doctors—one to 850. New Jersey with a population of over 4,000,000 has fewer than 4000 doctors and Connecticut with a population of 1,600,000 has 1947.

To make matters worse for Manhattan doctors, there are innumerable free (more or less) hospitals and dispensaries, besides two enormous medical centers. Many men in New York City find that their practices are diminishing and there are many of the old conservatives who cannot go along with the times. We live in a time of rapid changes and the physician must adapt himself to new conditions.

The cities are crowded with physicians while there are too few in the country. Motoring through Maine one finds town after town without a physician. When you do find one, he will probably tell you that he intends to remain in the small town only until he gets enough money to get to a city. If many of the physicians who find life rather dull in cities would leave for the smaller towns they would find an immediate profitable practice and a chance to do a great deal of good for humanity.

The overproduction of physicians should be studied. Brown University graduated about 280 men this June and ten per cent of these state that they intend to become doctors. In larger cities many immigrant families decide that their sons should study either medicine or law. These professions seem to give these families a background they could get in no other way. In other days in New York when certain sums were paid to a man when he married, a physician usually found that his profession would carry him into a good family—and a fairly wealthy one.

Technocracy would presumably limit those who study medicine to the actual requirements of a community. However, the present trend in American life is toward unequal distribution and it applies to food, money, doctors and everything else. The technocrats have much to be said for them. Thus far, Howard Scott's ideas seem to stand and in all probability Scott will go down in history as a second Darwin. Darwin was criticised; Scott has been.

Many believe that the New Deal will give us several years of prosperity, perhaps for ten years. What faces us then will be a question; at the present moment there are many who believe that after this era of prosperity we shall see a regime composed of a modified technocracy and communism. Soviet Russia, to-day, is so far ahead of us in many things, especially public health, that we must take notice.

—M. W. T.

Another Advance in Aviation

Senor de la Cierva's latest autogiro is wingless, can be driven at a snail's pace or at one hundred miles an hour, can take off after a run of eighteen feet, can descend perpendicularly, and can change motion in any direction, sidewise, upward, or downward, merely by tilting the horizontal rotors, which last means that many essential parts of the conventional plane can be dispensed with.

Such a plane, thanks to this Spaniard's inventive genius, brings nearer the ship of the air that is going to increase greatly the doctor's "cruising radius" and so help to solve the problem of properly distributing medical service.

Miscellany

Dr. Kickapoo

It is fatuously believed that the Kickapoo Medicine Man is no more—that he is no longer a glamorous figure in the market place, spooning out hocus-pocus more potent than radium, and leaving behind him on his travels the many cured, the many still edematous or dyspneic, and a completely enthralled and psychically uplifted clientele.

Nothing could be farther from the truth. It is a fact that, along with his colorful Indian regalia and appurtenances, he has vanished from the frontier, the circus cart-tail and the county fair, but he has acquired, in a more sophisticated society, the degree of M.D. and real eminence since those happy days.

In both cases, magic is the stock in trade. The Kick-

apoo Medicine Man's open-mouthed audience was no more under a spell than is Dr. Kickapoo's listeners in this or that local medical society as he expounds the complex elements and factors that enter into some special performance of incredible ease that, somehow, can never be duplicated by his rapt but incompetent disciples of lower caste.

Now, mind you, we are not decrying Dr. Kickapoo or his methods, or implying that he is a charlatan. *Entre nous,* we do not think that the Kickapoo Medicine man was an unmitigated and unalloyed charlatan. Undoubtedly his followers were satisfied, were cured frequently enough to justify boasts on the part of the magician, and were perhaps served well enough in their primitive day. Dr. Kickapoo is also a magician; he elaborates theories and methods which, while they cannot be applied by anyone else, are highly effective at his skilled hands and indubitably advance science.

In sooth, the Kickapoo Medicine Man is still with us. Long live Dr. Kickapoo, great artist, super-magician, social benefactor, and perchance the king of physicians! And let lesser men worship humbly and cavil not.

Actual Economic Episodes

I

Two ladies approach the information desk in the hospital office.

"Is the clinic in this building?" one of the ladies inquires.

"No," answers the clerk, "the clinic is around the corner, on Raymond Street."

"Is it a one-way street in the direction of the clinic?" pursues the lady. "Can we drive straight around there from here?"

P.S. They drive around in their Buick.

II

The doctor stopped at his Irving Trust branch to make a deposit. The teller, whom he knew slightly, handed him back his bankbook and asked him a question as to the age when his baby could probably be given whole milk; at the baby health station, it seemed, his wife had been instructed on this point but they were a bit uncertain about it. The doctor asked if the teller did not have a family physician. Why, no, was the answer, why should he have a family physician?

Why, indeed!

Crowded Professions

The leading vocations selected by students at Long Island University are medicine, teaching, dentistry and law. This was shown by a survey by Dr. Edward J. Sparling, research graduate at Teachers College, Columbia University, made public yesterday.

Dr. Sparling concluded after examining 888 men and women at the university that many college students are not wise in their choice of vocations.

"Men," the report said, "expect to earn four times and women two times as much as the workers in their respective sexes actually earn in the field. Men expect to make three times as much money on the average as women expect to make."

Dr. Sparling discovered that young people have distorted ideas concerning their vocations.

"An astonishingly large proportion of students—37 per cent—are preparing to enter vocations involving subjects in which their grades are low," he said. "Of the students who intend to be physicians, 50 per cent do not have grades high enough to admit them in a medical school in the United States.

"Other serious discrepancies in the vocational thinking of students are disclosed by the evidence that in spite of the religious and racial prejudices which will surely be used against them, and in spite of the economic, cultural and social handicaps which they have, 70 per cent are endeavoring to gain entrance to three of the most overcrowded vocations in the United States and 95 per cent are desiring to enter four of the most overcrowded vocations in the metropolitan area."

Dr. Sparling declared that frequently parents do not examine their children's innate abilities but press them into one of the four professions because of the fancied "social prestige."

—*New York Times,* May 24, 1933.

Physicians' Pay

The doctors complain of the faulty distribution of wealth as it is affecting them in the depression, and as it has affected them for the last decade and a half.

Medical Week, publication of the Medical Society of the County of New York, points out that the general taxpaying public must dig down deep to pay for the innumerable free hospital patients, and then adds that the doctor is twice victimized, as a taxpayer and as dispenser of free service in the clinics.

The editorial says:—"The conditions governing affiliations with municipal and voluntary hospitals are virtual confiscation of the service that is the sole source of livelihood to most doctors. Twenty years ago it would have been heresy to propose the payment of physicians for ward and clinic service. Today there is a growing lay acquiescence in the belief that the doctor, like every one else, is entitled to be paid for his work. The inability of a large section of the public to pay for medical care is due not to any inherent defect of private practice, but to a system that places the greatest part of the nation's wealth in the hands of a few people. The remedy lies in the eradication of the larger causes."

It is true that physicians gain in knowledge and skill from their free-patient work. Yet doctors are about the only commercialized professional class who are required to give a great amount of their time away for nothing. They should get paid for their work. Social institutions and wealth distribution should be arranged in such a way that they would be paid. At the same time millions of free patients now compelled to submit to pauperization should be put in the way of paying for what they get.

—*New York World-Telegram.*

Items of Interest

Fraud Warning

Not even Family Consultation Service is escaping racketeering. Warning of the following fraud on ministers and doctors is in order.

The man gives, perhaps correctly, an Irish name and Roman Catholic religion, but incorrectly his address in a northern New Jersey city. Is about 6 feet tall, spare erect build, dark hair, round face, red cheeks; uses rapid clear language; rather polite manners; admits marital infidelity, moderate alcoholism and discharge from job as wife's justification for having left him, with the child and all home goods, a second time within a few years.

All this is contritely stated followed by maudlin regret at absence of his six-year-old daughter and hysterical fears as to her whereabouts and health. Professes abject love for child but indifference to wife. The final step is refusal to follow advice as to good behaviour and employment for reconstruction of home and last a "touch" for money.

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Contemporary Progress

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symptom of an upper respiratory infection; or in cases of chronic tonsil infection preceding acute attacks of tonsillitis. In these cases the abdominal pain was colicky in nature and referred to the upper or mid-abdomen; usually there was constipation. There was no fever during the attack and few, if any, other symptoms. After several days an acute upper respiratory infection, usually mild, developed and the abdominal symptoms subsided. Eradicating the focus of infection, e.g., tonsillectomy in infected tonsils, permanently relieved the abdominal symptoms. The author is of the opinion that in the prodromal stage of acute upper respiratory infection, or in the interval periods of a chronic respiratory infection, a toxin is elaborated that acts specifically on the nerve endings in the musculature of the colon, to produce severe spasms. Correct diagnosis is important in these cases, especially to rule out acute surgical emergencies, particularly intussusception and appendicitis. Absence of stool findings and of severe toxic symptoms, and palpation of a contracting and relaxing colon differentiate this condition from intussusception. Absence of fever, muscle rigidity and psoas spasm differentiate it from appendicitis.

Diagnosis of Whooping Cough

W. Quillian *(Archives of Pediatrics, 50:200, March, 1933)* reports that of 100 cases of whooping cough seen in private practice, 34 were seen during the catarrhal stage of the disease before the typical whoop had developed. In 10 of these a cough plate culture was made, and 8 were positive for the B. pertussis, establishing the diagnosis of whooping cough at this early stage. In the 24 cases in which the cough plate culture was not made, the diagnosis of whooping cough was only tentative until the whoop developed. The author has not found the blood picture of definite value in early diagnosis, although an early leukopenia and persistent lymphocytosis is suggestive. The cough plate method he considers to be the most satisfactory method of early accurate diagnosis. Such diagnosis is important because the catarrhal stage is the period of greatest contagion. If more cases of whooping cough are accurately diagnosed at this early stage and promptly isolated with quarantine of exposed susceptible individuals, the yearly incidence of whooping cough will be much reduced.

Lung Changes in Whooping Cough

C. Hünermann *(Monatsschrift für Kinderheilkunde, 57:36, February 16, 1933)* has found roentgenological study of the lungs of definite value in whooping cough. In the earliest catarrhal stage, he has not found any constant typical changes, although there may be evidence of abnormal inflation, with unusually transparent lung fields. In the second stage *(stadium convulsivum)*, however, definite changes occur in the lung even in cases that show no clinical evidence of pulmonary complications. This consists in productive perivascular, peribronchial, and interstitial inflammation, which begins in the hilus; these lesions may become confluent, forming larger lesions, often an opaque triangular lesion in the basal portion of the lung. Such changes are seen in all cases of whooping cough of any severity; in the mildest cases such changes are seen in 40 per cent. In such cases, therefore, in which diagnosis is somewhat difficult because of the mildness of the typical symptoms, the roentgenological findings in the lungs may be of definite diagnostic value. The persistence of these lung changes indicates that they may be the cause of the long duration of the cough that so frequently characterizes whooping cough.

Effect of Tonsillectomy on Diphtheria Immunity

A. Topper and S. Leader *(American Journal of Diseases of Children, 45:735, April, 1933)* note that in a previous study it was found that 81.5 per cent. of 151 children who had been Schick-positive before tonsillectomy became Schick-negative within six months after operation, while normally only 10 to 15 per cent. would become Schick-negative in this period. In a new series of 81 children who gave positive reactions to the Schick test before tonsillectomy, re-tests six months later showed that 54, or 66.6 per cent. had become negative. Of the children under six years of age, 64 per cent. had become negative; and of those between six and thirteen years of age, 71 per cent. had become negative. Among those whose reaction remained positive there were 3 children who had been given toxin-antitoxin injections several years before tonsillectomy, but had not become Schick-negative; if these 3 resistant cases had been excluded, the percentage of those acquiring immunity to diphtheria after tonsillectomy would have been increased. But the percentages indicate very clearly that tonsillectomy favors the development of immunity to diphtheria, as compared with what would normally occur. All studies of immunity to diphtheria indicate that the presence of the diphtheria bacillus is essential to the production of immunity to diphtheria; and this, the authors believe, is true after tonsillectomy, as well as without operation; hence such immunity is most likely to develop in congested areas where the incidence of diphtheria is high. With or without tonsillectomy the development of immunity is apparently a humoral rather than a local mechanism.

Infant Mortality

J. B. Gillespie *(Journal of Pediatrics, 2:537, May, 1933)* in a study of the records of postmortem examinations of infants and children at the University of Minnesota, Department of Pathology, for July, 1928, to January, 1932, noted that approximately 58 per cent. of the subjects were infants in the first year of life. The findings represented a fair index of the infant mortality in the cities of Minneapolis and St. Paul. A classification of the primary causes of death in these (517) cases showed that: Trauma at birth was the cause of death in 102 cases (10.7 per cent.), which was 30 per cent. of the deaths during the neonatal period, i.e., the first four weeks of life; in all these cases intracranial injury was demonstrated. Premature birth was the cause of death in 97 cases (18.7 per cent.); no obvious cause, other than prematurity, was found in these cases. In 3 cases, the length and weight of the infant and calculated duration of pregnancy indicated delivery past term as the cause of death. Congenital malformation was the cause of death in 46 cases, or 8.8 per cent. In 20 additional cases, in which death occurred from another primary cause, congenital anomalies were found. The most frequent malformation was hydrocephalus; of congenital defects of the heart the most common was interventricular septum. Pneumonia was the cause of death in the largest group of cases (20 per cent.). Less frequent causes of death were congenital syphilis, asphyxia, peritonitis, mastoiditis, septicemia, marasmus, intussusception, pyelonephritis, and tuberculous meningitis. In 31 cases the cause of death was undetermined. The observation of these cases, the author concludes, has made apparent that further reduction of the "lamentably high" mortality among infants depends on more exact knowledge of the causes and factors most concerned.

Abstract of Mr. Lorenz J. Brosnan's Paper

(Concluded from page 214)

not required to possess the extraordinary learning and skill which belongs to only a few men of rare endowments; he must keep abreast of the times and follow the approved methods in general use; he must give proper instructions to his patient; the law does not impose upon the doctor the duty of guaranteeing a good result, but he is required to use the skill and learning of the average physician and to exercise reasonable care and to exert his best judgment in the effort to bring about a good result.

The plastic surgeon, the same as every other physician, should guard against making statements to his patients which might be interpreted by the patient as a guarantee of a specific result or contract to cure the condition treated. Perfection is not required of a doctor and he should not undertake to enter into any special arrangements whereby he warrants a specific result or a specific cure. The doctor should never undertake to operate upon a case when his better judgment dictates that he should leave well enough alone.

In court as well as out of court specialists in the field of plastic and reconstructive surgery unfortunately are obliged to combat the situation that prevails as a result of the plastic work which is done by the quack and the fake beauty doctor. In my experience I have encountered cases where attempts were made by plaintiffs suing plastic surgeons to capitalize upon the prejudice against such quacks to the detriment of the doctor. I am happy to report, however, that such blackmailing tactics have failed to achieve their purpose against the ethical and competent practitioners in your specialty.

MEDICAL BOOK NEWS

Edited by WILLIAM HENRY DONNELLY, M.D.

All books for review and communications concerning Book News should be addressed to the Editor of this department at 1313 Bedford Avenue, Brooklyn, New York.

JULY, 1933

REVIEWS

Directory of Psychiatric Clinics in the United States

DIRECTORY OF PSYCHIATRIC CLINICS IN THE UNITED STATES. Compiled and edited by the Division on Community Clinics of the National Committee for Mental Hygiene. New York, The Commonwealth Fund, 1932. 165 pages. 8vo. Paper, $1.00.

In this directory are listed clinics serving children and adults in the field of mental health. These are classified by states. There is listed the name of the clinic, how often and at what time the clinic is in session, the personnel and the number of patients seen. The book is useful as a guide for workers who may require knowledge of where patients may be sent.

STANLEY S. LAMM.

Opium, the Diary of an Addict

OPIUM, THE DIARY OF AN ADDICT. By Jean Cocteau. New York, Longman's Green & Company, 1932. 188 pages, illustrated. 12mo. Cloth, $2.00.

The author of this diary, an opium addict, is regarded in literary circles as a strange genius. And as we turn the pages of this peculiar little book there is something weird and unconventional about it. There are numerous line drawings which one might offhand regard as the work of a paretic. But on further examination we find many of them to be a conglomeration of tubes of different shapes and sizes, probably representing opium pipes, so arranged as to convey some semblance of a human form. An arm will end abruptly in a tube. The eyeball, too, will show as a projected tube.

These notes are very choppy and incoherent and the physician too familiar with the expressions of an unstable mind will not see any particular stroke of genius in any of these writings. The reviewer wonders whether some friend might not have recorded these sayings of the author. A person talking in his sleep or one under the influence of much alcohol might have said many of the things printed in this book. On that account, the physician will not find anything especially appealing in these pages.

EMANUEL KRIMSKY.

Food, Health, Vitamins

FOOD, HEALTH, VITAMINS. By R. H. A. Plimmer, D.Sc., and Violet G. Plimmer. Fifth edition. New York, Longmans, Green & Company, 1932. 143 pages. 12mo. Cloth, $1.20.

The literature on vitamins has been accumulating for a number of years at a rapid rate and in enormous volume. The authors have taken the products of accumulated investigations of this subject and incorporated them in a small book written in non-technical language. The book has gone into the fifth edition in seven years and is apparently enjoying much popularity both in England and in the United States.

It deals with all the vitamins, a separate chapter for each, and in brief, simple terms sketches the historical aspects of each vitamin, describes the effects of vitamin deficiency and methods of prevention and cure of vitamin deficiency disease. There are also chapters on the normally balanced diet, and special diets, stressing particularly the vitamins necessary in pregnancy, parturition, infancy, childhood and during infections.

The authors employ a clever chart, which they term "The Square Meal," to graphically indicate the ingredients of a diet which are necessary to make it complete and balanced. The book is very well written and can be recommended by physicians to those patients who wish authoritative information on this important subject.

WILLIAM S. COLLENS.

Textbook of Surgery

A TEXTBOOK OF SURGERY. By John Homans, M.D. Second edition. Springfield, Ill., Charles C. Thomas, 1932. 1231 pages, illustrated. 8vo. Cloth, $8.00.

In this second edition, as stated by the author, much redundant, obscure or incorrect material has been removed, and to a number of chapters new sections have been added, thus bringing the material under discussion up to date. The general plan of the book has not been altered. A chapter on anaesthesia has been added. In other respects the manner of handling the material of the different chapters has followed the plan of the first edition, namely, an introductory historical paragraph or more followed by a brief description of the anatomy and physiology concerned and then particular emphasis upon the surgical aspects of the disease under treatment. Otherwise the chapters are much as in the first edition. A general bibliographical index of value to those wishing to read more fully upon a subject is appended at the end. There are numerous illustrations to elucidate the descriptive material. The book is to be recommended not only to the undergraduate student of surgery but to the advanced student and practitioner as well.

EMIL GOETSCH.
J. RAPHAEL.

International Clinics

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, etc. Volume 1, 43rd Series, 1933. Edited by Louis Hamman, M.D. Philadelphia, J. B. Lippincott Company [c. 1933]. 305 pages, illustrated. 8vo. Cloth, $3.00.

After many years of the able editorship of Dr. Henry W. Cattell, the International Clinics, the first volume of the forty-third series, 1933, appears under new editorship. Dr. Louis Hamman, of Johns Hopkins University, has assumed the responsibility which was borne so well by Dr. Cattell, who carries with him the best wishes of all who know him. To Dr. Hamman in his undertaking go the best wishes of all who know him, as well as the encouragement of all who look eagerly for the appearance of the issues of the Clinics. This volume upholds the standard of previous volumes. Timely and well written articles appear in the section on Medicine. The indications for the use of special tests by the practitioner by Bloomfield present concisely the use as indicated of methods necessary after thorough physical examinations. Gallop rhythm is well discussed. The use of gentian violet in burns of all degrees is described. Burnam has discussed thoroughly the value of radium as a therapeutic agent and given us a clear picture of the cases in which it is useful, and those in which it is not indicated. Bromide intoxication is discussed in a well wrtten paper. In the section on Surgery, important surgical conditions are presented, each article is well and carefully written, and gives the best experiences of the authors. Shock, peripheral arterial disease, fecal fistula, studies in intestinal obstruction and tuberculosis of the eye are the topics. In the neurological field, a clinic is presented of the several types of tremor with a discussion of their significance. This paper clears many indefinite ideas of tremors. An article on progressive muscular atrophy deals instructively with this condition. One of the most interesting and instructive articles in this issue is the report of a clinical pathologic conference held by Hamman and Rich. This presentation gives some idea of the value of such conferences. Much information is presented in the section on recent progress in Medicine and Surgery. One cannot help feel that this volume is valuable and will benefit each person who studies it.

HENRY MONROE MOSES.

The Failing Heart of Middle Life

THE FAILING HEART OF MIDDLE LIFE. By Albert S. Hyman, M.D., and Aaron Parsonnet, M.D. Philadelphia, F. A. Davis Company, 1932. 538 pages, illustrated. 8vo. Cloth, $5.00.

Of their opportunities in the field presented by such an attractive title, the authors have scarcely succeeded in making the most. This statement is regretfully made, but it is justified by poor chapter arrangement of the text, incompleteness of therapy, and occasional carelessness of statement and of spelling of proper names. Careful editing would have made these criticisms impossible.

David Riesman supplies an attractive preface, and is gratified that the authors have adopted a term used originally by himself, "myocardosis."

The ten-page introduction is an excellent presentation of present day theories and concepts of cardiology. It is clear and outlines the hopes of the authors in their appeal to their readers.

With the book dealing in turn with the coronary arterial system in health and disease, the myocardosis syndrome, coronary thrombosis and occlusion, electrocardiographic changes associated with coronary artery disease, angina pectoris, and medico-legal aspects of sudden death from heart disease, the mischief is that under these splendid headings of the parts of the volume, the material in the component chapters is confusingly presented at times.

Thus, coronary occlusion pathology appears in Chapter VI (and is well handled), its symptomatology is delayed until Chapter XII, more pathology (of post-occlusive aneurysmal dilatation) in Chapter XX, more etiology in Chapter XXI, prognosis in Chapter XXII and treatment in Chapter XXIII. Part IV of 100 pages dealing with the electrocardiographic changes associated with coronary artery disease, has many references to the electrocardiographic findings in occlusion, but they must be sought for diligently in this extended account. There is no illustration of Lead IV, the so-called coronary lead. Historical data is missing. And so a valuable account suffers from poor assembling.

There is a wealth of clinical observation and reference in the volume, and one can read profitably and with interest on every page, but difficulty and irritation await the reader who is endeavoring to follow a particular disease logically.

"Myocardosis" unfortunately is not defined and so a much desired clarity of concept is lost. The only reference to therapy is that "treatment even at its best is mostly futile" (page 136).

Lewis is credited with applying the term "effort syndrome" to coronary inadequacy (page 97) and a case is cited. This would indeed be news to Sir Thomas. The late Karell would not recognize his diet under the name "Carrel" (page 215) and the late beloved T. Lauder Brunton would be surprised to see his name spelled "Lowder" on page 407.

Contrasted with the "broken method" of presenting coronary occlusion, Part V dealing with angina pectoris, is splendidly satisfactory. From history to therapy it is excellent.

A 40-page bibliography, alphabetically arranged according to the names of the authors, is an interesting, unusual and valuable feature of the book. The names of publications with journal names and dates are given, and as the selections are chosen with excellent judgment, cardiology of middle life can be scanned hurriedly and satisfactorily.

The reviewer would hope for a second edition of this work, amended, rearranged and corrected.

FRANK BETHEL CROSS.

Diseases of the Eye

DISEASES OF THE EYE. By Hofrat Ernst Fuchs, M.D. The fifteenth German Edition of the Lehrbuch der Augenheilkunde as Revised by Maximilian Salzmann. Tenth English Edition, authorized translation by E. V. L. Brown, M.D. Philadelphia, J. B. Lippincott Company [c. 1933]. 641 pages, illustrated. 8vo. Cloth, $7.00.

Though we may lament the passing of the "Unabridged Bible of Ophthalmology" we rejoice that it is not to pass away with the two great masters, Fuchs and Duane, who made it a universal standard. The great bulk of the earlier volumes seemed hardly a detriment for it represented a horn of plenty which one must admit should be of generous proportions.

The translator of this new volume has found it advisable to omit certain sections. Perhaps a child will soon appear—a companion volume to this—which will include methods of examination, refraction and muscle anomalies. Without doubt the new work is a fine product and is bound to hold first rank in the march of ophthalmic literature. Its pages will always glow with an air of familiarity for the arrangement, text and illustrations are a likeness of the parent volume.

The title of the new book, "Diseases of the Eye," makes one feel entitled to a detailed discussion of the various entities. Perhaps the author omitted a consideration of the newer bacteriology of trachoma because he did not think such matters appropriate for the *under*-graduate to whom he directs the book. If this is so, it would not seem justifiable to omit pilocarpine from the index, and enumeration of its salts as used in ophthalmology.

In the section dealing with atrophy of the choroid a paragraph is found entitled "Hereditary degeneration of the macula (Leber, Behr)"; while about a hundred pages further on we find a description of a familial retrobulbar neuritis—the name "Leber's Disease" does not appear in the index. Amaurotic family idiocy is described under "Diseases of the Retina," but quite incompletely. One is at a loss to interpret the relation of these somewhat similar diseases. While these points are unimportant to the graduate as he can readily evaluate the entities, the under-graduate might be confused.

After all, the only adverse criticism of this very valuable book is that of the arrangement, and arrangement is based on opinion, and doubtless the author and translator are better able to judge of this than is the reviewer.

JOHN N. EVANS.

Diseases of the Heart

DISEASES OF THE HEART. By Sir Thomas Lewis, M.D. New York, The Macmillan Company, 1933. 297 pages, illustrated. 8vo. Cloth, $3.50.

This volume fully maintains the high standard which had been previously set by works of this author. Most of his previous works have been of a highly specialized nature but this volume is written to give students and practitioners a thorough understanding of the modern conception of heart disease. All, except extremely rare, diseases of the heart are presented and the main stress is on the facts which can be ascertained at the bedside. Specialized procedures such as electrocardiography and orthodiography are only introduced to a very limited extent. Throughout the book the emphasis is placed on function. As the author says, "In managing our patients our thoughts must be chiefly set in terms of function and not of structure. To whom I fail to teach this first simple, but essential, lesson I have nought to teach!"

All the different phases of heart disease and the conditions associated with cardiac disorders are concisely but fully presented. The author only deals with what he has observed and believes to be true. When there is any doubt on a point he does not discuss the various theories that have been offered but simply states that the explanation is unknown. The book is of convenient size and is so full of valuable material that every practitioner of medicine should possess a copy.

J. HAMILTON CRAWFORD.

Diagnosis and Treatment of Postural Defects

THE DIAGNOSIS AND TREATMENT OF POSTURAL DEFECTS. By Winthrop Morgan Phelps, M.D., and Robert J. H. Kiphuth. Springfield, Ill., Charles C. Thomas, 1932. 180 pages, illustrated. 8vo. Cloth, $4.00.

The authors have had an unusually rich field in the students of Yale University upon which to found their study. This book of 175 pages is devoted entirely to the human posture and is a valuable addition to the literature of the subject. The introduction and the first two chapters on Evolutionary Influences and Environmental Influences are of very great interest. The chapter on Body Mechanics is one of great detail and is valuable. Some fifty pages are devoted to postural examination. The book closes with corrective exercises and Statics. The photographs in the corrective exercise portion of the book are exceedingly fine.

The work belongs more properly to the orthopedic surgeon and the medical gymnasts than to the general medical man, but is, however, of interest to all treating the human body.

JACQUES C. RUSHMORE.

A Decade of District Health Center Pioneering

A DECADE OF DISTRICT HEALTH CENTER PIONEERING. A Ten Year Report of the East Harlem Health Center. Report prepared under the direction of Kenneth D. Widdemer, Executive Officer. New York, The East Harlem Health Center, Inc., 1932. 148 pages, illustrated. 8vo. Paper, $1.00.

This book represents a report of ten years' intensive work at the East Harlem Health Center. The area served by this already famous organization encompasses less than one square mile. In contrast to other reports that are burdened with meaningless statistics there is something fascinating to this story. We read about the different peoples inhabiting this area rather than of figures; of the peculiar problems which each race presents to the social worker; and how helpless people are guided in useful ways. The vividness of this trying undertaking is quite realistically brought to the reader's attention with photographs that are well prepared. The coordination of the various services—social, maternity, infant welfare, nursing, dental, venereal, and health education—appears to be a monumental task.

It is to be hoped that in years to come much less energy will be required to keep alive the work of the past decade.

EMANUEL KRIMSKY

Your Teeth and Their Care

YOUR TEETH AND THEIR CARE. By Carl W. Adams, D.D.S. St. Louis, The C. V. Mosby Company, 1932. 141 pages, illustrated. 12mo. Cloth, $1.25.

This book follows the entire course of dental instruction from the development of the teeth through to the replacement of teeth by artificial substitutes. The subjects covered are structure and function of the teeth and oral tissues, irregularities of the teeth, diseases of the teeth, diseases of the soft tissues, periodontal diseases and their care, diet and dental health and then the various dental procedures.

A book of such ambitious pretentions can in so few pages do no more than skim the surface. If it does nothing else but stimulate the interest of the lay public in the teeth and their contiguous tissues, it will have accomplished its purpose.

The reviewer feels that a book for lay consumption should be written in everyday language, although the author has made a great effort to explain in considerable detail the scientific terms used. Again there are minor misstatements of fact in various places and omission of valuable further explanation which might have been avoided by more careful editing.

The format of the book is good because it is a handy edition. It might have had a much better appearance had good photographs been used instead of some poor schematic drawing.

In spite of this critical detail, the author has made a great effort in this timely book to spread the gospel of dentistry to the general public. It should be in the waiting room of every dentist and physician to be read by every patient.

LEONARD KOHN.

Private Practice

PRIVATE PRACTICE. By A. L. Furman. New York, The Macaulay Company [c. 1933]. 251 pages. 12mo. Cloth, $2.00.

"Private Practice" is a sequel to "The Interne," of which the author was a collaborator. In a publisher's note, Mr. Furman is described as a younger member of the New York Bar, whose legal practice has afforded him an opportunity of learning, at first hand, of conditions surrounding the medical profession. So much for atmosphere of reality.

The principal character of the story, Dr. Carl Armstrong, has completed the colorful interneship, as described in the earlier novel, "The Interne," and has started practice in an industrial town near New York, after obtaining the position of attending physician to a large mill. He quickly becomes involved in the social unrest and political intrigues of the mill, and finds himself beset here, as he was in the hospital, with the many temptations and questionable procedures incident to the practice of medicine:—crooked politicians, shady lawyers, grafting lodge officials, sensual women patients, racketeering druggists.

In spite of the fact that Dr. Armstrong did not succeed in keeping his escutcheon entirely unspotted, he does maintain his interest in his profession and is not unmindful of his obligations to his patients and to his family. It is rather unfortunate that the sex relations of this struggling doctor have been overemphasized in this book as they were in the earlier novel. It is evident that the human contacts of a doctor have a greater appeal in a novel than his actual professional life. "Private Practice" is essentially a story of a doctor's relations to his environment.

General History of Nursing

A GENERAL HISTORY OF NURSING. By Lucy R. Seymer. New York, The Macmillan Company, 1933. 317 pages, illustrated. 8vo. Cloth, $2.75.

This book is a scholarly kodak of the history of nursing and unrolls the whole panorama objectively and internationally. The time has come when we should be considering the history of nursing as *history*. This is what the author has accomplished.

It reveals: the status and development of the medical and nursing professions; the reaction to and the growing responsibilities of the well people toward the sick and needy; the development of medicine, surgery, hygiene, sanitation, hospitals, social work; and the achievements of the heroes and heroines in primitive times. The author shows the continuance of these trends on through the centuries. The book becomes more internationally minded and sweeps the reader's interest into the chapter on "The Red Cross." Then tremendous emphasis is laid upon the "Development of Training Schools." While the following chapter on "The Development of Nursing Education and Curricula" is brief, it shows its origin and development. The two chapters on "Public Health Nursing" are intensely interesting. After the author has given a very brief survey of the whole international field, the history and development of its main branches today are discussed, leaving with the reader a very clear picture of the progress of public health nursing. A chapter has been given to "Psychiatric Nursing," which brings to light and unfolds the history and development of the humane care of the insane and prisoners, interwoven with the introduction of the male nurse's entry into the nursing field. The remaining two chapters give a very illuminating revelation of the vast achievements accomplished by "State Recognition of Nursing" and "Nursing Organizations."

The appendices, twelve page bibliography, and the footnotes give the book a *scholastic dignity*. The style is superb in its clearness and simplicity. It is not only a beneficial supplement to the existing text, but it is *indispensable*.

LAURETTE A. STOWE.

Principles and Practice of Obstetrics

THE PRINCIPLES & PRACTICE OF OBSTETRICS. By Joseph B. DeLee, M.D. Sixth Edition. Philadelphia, W. B. Saunders Company, 1933. 1165 pages, illustrated. Large 8vo. Cloth, $12.00.

The sixth edition of this great book is very welcome. Much has been rewritten, and considerable new material has been added. Easily the definitive English text book on obstetrics, it is a veritable mine of valuable information.

The illustrations are numerous and excellent, the material well arranged, and the text easily read. The reader's interest is well maintained.

It may contain too much for the undergraduate student, but only because he has neither time nor background to digest it. For him it is a valuable work of reference, which speaks with great authority. No one actively practicing obstetrics, the occasional accoucheur, family physician, or expert obstetrician can afford to be without it.

The fifth edition is not good enough now. The reviewer hopes to be able to read a few pages every night, no matter what the hour.

CHARLES A. GORDON.

The Child and the Tuberculosis Problem

THE CHILD AND THE TUBERCULOSIS PROBLEM. By J. Arthur Myers, M.D. Springfield, Ill., Charles C. Thomas, 1932. 230 pages, illustrated. 8vo. Cloth, $3.00.

It may be said of this book that it brings to the student of tuberculosis, in fairly concise form, a very practical presentation of the modern methods of discovery, control and prevention of tuberculosis among children. Each chapter takes up a subject of peculiar import, discusses it from many angles, and at the end gives a very happy summary of the author's conclusions.

Dr. Myers, of course, has had a wealth of experience in observing tuberculosis, especially among children. He lays increasing emphasis upon the value of the Tuberculin Skin Test, preferably the Mantoux method,—and finds it applicable not only to the childhood problems, but even in adult cases where tuberculosis may be suspected. Tuberculin he considers as of great screening value and where positive results are obtained further roentgenographic exploration is then indicated. He visualizes the ideal state as one where these methods will be conducted en masse,—going over the entire population with a fine tooth comb. It is very possible that then and only then will the problem of the discovery of tuberculosis really be solved. The presumption is, of course, that when once discovered and modern methods are immediately brought into play toward the control of the disease, within a few generations it will almost cease to be a problem at all.

We recommend this book to all practitioners of medicine.

FOSTER MURRAY.

Text-Book of Midwifery in the Tropics

A TEXT-BOOK OF MIDWIFERY IN THE TROPICS. By V. B. Green-Armytage, M.D., and P. C. Dutta, M.B. Calcutta, India, The Book Company, Ltd., 1933. 306 pages. 12mo. Cloth, Rs. 5/.

This text-book is written for Indian students in staccato style and is intended to meet conditions peculiar to the East. One of the authors, at least, has had a long experience in an Indian hospital with a large amount of clinical material. Apparently intended to be a manual, it is packed with information. Only the essentials are included, and the text is ideally arranged for ready reference. The medical student anywhere in the English speaking world might well use it. The usual Western text-book may be a mine of information, but the time limits of the student do not permit him to do any more than touch the surface. The style of this book might well be imitated by our own teachers. The reviewer enjoyed reading it, and recommends it to any student of obstetrics and gynecology.

CHARLES A. GORDON.

The History of Medicine

THE HISTORY OF MEDICINE. By Bernard Dawson, M.D. New York, The Macmillan Company, 1932. 160 pages, illustrated. 12mo. Cloth, $2.50.

Dr. Dawson calls this a "Short Synopsis." It is both short and synoptic, and yet surprisingly satisfactory. This little book shows the high lights in medicine. It is based on the lectures

delivered by the author to the junior medical students of the Adelaide University, Australia.

Brevity has not caused the loss of perspective. In reading this book, one gets a good view of the stream of medical knowledge sweeping through the ages. The several chapters deal with primitive medicine, the Grecian period, the Greco-Roman period, the Dark Ages and the Hippocratic tradition, the Middle Ages and the universities, the renaissance, and the period of consolidation of medical learning which occurred during the Seventeenth, Eighteenth and Nineteenth Centuries. The only weakness of the text is the absence of the important medical events of the last half century.

Dr. Dawson writes with clarity. His descriptions are succinct and discriminating. His style is scientific. The illustrations are well selected. This is a book that can be recommended to students who want a brief history of medicine. It fills a need. It contains nothing superfluous. No student should be permitted to graduate in medicine unless he knows all that this book contains. We would go further, and say that no layman's education is complete without this knowledge.

J. P. WARBASSE.

BOOKS RECEIVED

Books received for review are acknowledged promptly in this column; we assume no other obligation in return for the courtesy of those sending us the same. In most cases, review notes will be promptly published shortly after acknowledgment of receipt has been made in this column.

EGG, WHEAT OR MILK-FREE DIETS. With Recipes and Food Lists. By Ray M. Balyeat, M.D., Elmer M. Busten, M.D., and Ralph Bowen, M.D. Philadelphia, J. B. Lippincott Company [c. 1933]. 149 pages, illustrated. 8vo. Cloth, $2.50.

THE SURGICAL CLINICS OF NORTH AMERICA. Volume 13, No. 2. (New York Number.) April, 1933. Issued serially, one number every other month by the W. B. Saunders Company, Philadelphia and London. Per Clinic Year (6 nos.), Paper, $12.00; Cloth, $16.00.

THE INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatment and Practitioner's Index. Edited by Carey F. Coombs, M.D., and A. Rendle Short, M.D. Fifty-first Year, 1933. Baltimore, William Wood & Company, 1933. 572 pages, illustrated. 8vo. Cloth, $6.00.

ALLERGY AND IMMUNITY IN OPHTHALMOLOGY. By Alan C. Woods, M.D. Baltimore, Johns Hopkins Press, 1933. 176 pages. 8vo. Cloth, $2.25. (Monograph No. 1, The Wilmer Ophthalmological Institute, Johns Hopkins Hospital and University.)

THE SCIENCE OF HUMAN REPRODUCTION. Biological Aspects of Sex. By H. M. Parshley, Sc.D. New York, W. W. Norton & Company [c. 1933]. 319 pages, illustrated. Cloth, $3.50.

TOWARDS MENTAL HEALTH. The Schizophrenic Problem. By Charles Macfie Campbell. Cambridge, Mass., Harvard University Press, 1933. 110 pages. Cloth, $1.25.

LES MALADIES DE L'ENERGIE. Les Asthénies et la Neurasthénie. By Albert Deschamps and Jean Vinchon. Fourth Edition. Paris, Felix Alcan, 1932. 423 pages. 8vo. Paper, 40 francs.

UN PERICOLO SOCIALE: Le Brucellosi. By A. Alessandrini and M. Pacelli. Rome, "Annali d'Igiene," 1932. 184 pages, illustrated. 8vo. Paper, 24 lire.

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